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A HISTORY
OF
ENGLISH PUBLIC HEALTH
1834 – 1939

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— 1834–1939 —

by

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*To my wife, G. M. Frazer and my brother,
R. F. Frazer, for much help
and encouragement*

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PREFACE

The period covered by this book is from 1834, when the Poor Law Amendment Act was passed, to 1939, when the second world war began. It was a matter of some difficulty to decide upon the date on which the formal history of Public Health, including the events leading to the passage of the first Public Health Act, could be said to have started, and the one chosen is merely that considered most appropriate out of several almost equally suitable. The main reason in favour of it is the close association which existed between the Poor Law and Public Health, both in the years preceding the inception of the latter service and throughout the greater part of the period with which this history deals.

The epoch between 1834 and 1939 is one of the most interesting in the social history of this country. During the first half of it industrial and economic changes, never before experienced in any part of the world, were occurring at such a rate that neither the reformed Parliament nor the unreformed Civil Service could keep up with them. These unplanned and largely unpredictable changes, rendered necessary by the demands of industry, created conditions in the larger towns which led gradually to the establishment of new organs of central and local government. The form which local government assumed in this country in the nineteenth century was largely dictated by the requirements of Public Health.

This book is an attempt by a member of the Public Health Service, who is also engaged in University teaching, to give an account of this interesting period both from the central and local points of view. A history of Public Health can never present more than a partial account of the subject unless it gives due consideration to the many social factors which continuously exert their influences upon the physical and mental well-being of the population. Such factors as, for example, the standard of living, the Poor Law, and factory legislation—to give only a few—have affected the health of the community to a marked extent. I have therefore essayed in this book to take sufficient account of the more important of these influences, without overloading the narrative with so much detail in regard to “social subjects” as to obscure the more significant Public Health picture.

In dealing with Public Health in the nineteenth century it has been found necessary to devote a considerable amount of attention

to epidemiology. In an era when sanitation was either absent altogether or sadly imperfect and the greater part of the working-class population lived in poorly built and badly planned houses under conditions of severe overcrowding, certain types of epidemic diseases assumed alarming proportions. It would be, I think, true to say that the greatest stimulus of all to sanitary reform in the early period came from the comparatively infrequent visitations of cholera, each of which remained as a terrifying memory for years after.

One of the difficulties facing a writer who attempts to plan a history of a subject like Public Health, with its many branches, is to decide whether to treat it chronologically or to deal completely with each branch separated from the remainder. The chronological method, used by Sir John Simon in *English Sanitary Institutions*, written at a time when Public Health was much less complicated than it has since become, possesses the advantage that it enables the writer to present a complete picture of all the influences affecting the health of the community at any given period. This advantage conforms so well with the plan on which the present book is based that I have had no hesitation in adopting the chronological method as far as practicable, in spite of the attendant disadvantage that it entails the separation of any one branch of the subject into a number of parts.

Much of the material on which this book is based has been derived from published documents, including the various annual and special reports presented to the General Board of Health, the Privy Council, the Local Government Board, the Ministry of Health and the Board of Education. An additional source of information has been the reports of the numerous Royal Commissions, Inter-Departmental Committees and other bodies set up to inquire into special Public Health problems. Last among the official sources, but in many ways by no means least in order of importance, come the annual reports of the Medical Officers of Health. These reports, dealing with local problems of great interest and diversity, have been referred to in connection with the Public Health arrangements of some of the larger centres of population.

In a book of this nature, written during the stress of a busy official life, omissions and mistakes are inevitable, and I would like to apologise to the reader in advance for any errors of fact or of judgment which he may find. If the book succeeds in conveying to members of the medical profession and to the general reader a clear picture of the great developments in the communal care of the health of the people achieved during a century of thought and effort, my object will have been attained. It is hoped also that the

book will be of service to students working for the Diploma in Public Health at the various universities and to those reading this subject as part of the Final examination for medical degrees and diplomas.

It is a pleasant duty to express my appreciation of the advice on many individual points received from friends at some of the universities and in the Central and Local Government Service. These kind helpers are too numerous to be thanked individually in a preface. I should, however, like to record especially my indebtedness to the Controller, H.M. Stationery Office, for permission to quote from the extensive series of reports on Public Health matters issued under the aegis of various Government Departments during the last fifty years; to Dr. E. Ashworth Underwood, Director of the Wellcome Historical Medical Museum, for valuable assistance in the choice of illustrations; and to my friends, Sir Allen Daley and Dr. C. O. Stallybrass, for most helpful criticism and advice during the period when the book was in draft form.

My thanks are also due to Miss P. Moore, Sub-Librarian of the Athenæum, Liverpool, for her assistance in enabling me to obtain access to some parts of the literature, and to Mr. A. C. James, Dipl.P.A., of the Liverpool Public Health Department, for his unwearying co-operation during the preparation of this book.

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INTRODUCTION, 1834-48

In attempting to compile a history of the Public Health movement in England an author is at once confronted by the difficulty that his subject has no defined boundaries. The individual as a unit in the community is subject to many influences and these in varying degree act upon him from birth to death, determining in conjunction with his hereditary make-up, health and physical fitness, as well as the remainder of his physical and mental qualities. The standards of parental—especially maternal—care when he is an infant, housing, education and nutrition in adolescence and employment when he becomes an adult are some of the factors which will affect the individual to a marked extent throughout his life influencing, amongst other things, his health and physical fitness. A complete account of the history of Public Health in any country and at any time has therefore to pay some attention to such factors as social and industrial conditions besides dealing with the more formal legal and administrative machinery set up by the State to conserve and improve the health of the individuals comprising the community.¹ The number of the factors influencing the Public Health is indeed very large and, like other historians, the historian dealing with this minor branch of a vast subject is compelled to choose, in accordance with his own views of their relative importance, from the large array of facts which are at his disposal. It may be true, as some think, that history is an over-simplification of exceedingly complicated events ; and this is so not only because the facts are many and some of them are unknown but because many events previously determined in the thoughts and emotions of individuals never emerge as historical facts at all.

The Public Health Service in this country may be regarded as an administrative system based upon a number of Acts of Parliament and upon the machinery of the Civil Service and Local Government. Action by the State to influence in a favourable sense the health of the community was largely unnecessary during the centuries when England possessed a small population living almost entirely in rural surroundings and spread thinly over the surface of the countryside. Until the advent of the industrial era there were,

¹ Cf. Newsholme's aphorism that "The health of a community usually varies with the material well-being of its members."

apart from London, few towns of any size, and even such cities as Norwich and York, reckoned as large in the estimation of the eighteenth century, were pigmies in comparison with the giants which sprang up in many parts of the country during the earlier years of the reign of Queen Victoria. In Lancashire and Yorkshire, where the first impact of the Industrial Revolution was felt, there grew up almost from the ground, within the space of half a century, a score of towns with populations of over fifty thousand.¹ Lack of any means of public transport compelled the builders of the new industrial towns to house as many families as possible on limited sites of land. So were invented the back-to-back house, the house situated in a court, the tenement and all the other methods of providing shelter for human beings without regard to sanitation, comfort or even decency.

It is unlikely that the statesmen who governed this country during the earlier years of the nineteenth century felt much concern about what was happening in the urban areas of a county as far away from London as Lancashire. There was at that time and for many years after, a great gulf fixed between the ruling classes, mainly living in the South of England, and the labourers increasing in number in the industrial towns in the North. The great landowners, strongly represented in Parliament, understood well enough the rural worker, but they had little knowledge of the needs of the operatives who were tending the newly-invented machines in the cotton mills of Lancashire. For this they were hardly to be blamed. Mankind up to that time had had little experience of the results, from the health point of view, which would follow from the packing of large populations on limited areas of land without providing for sanitation or for cleansing. It is true that isolated voices in different parts of the country as, for example, Currie in Liverpool, Thackrah in Leeds, and Percival in Manchester, had been raised from time to time to point out the sanitary evils which were even then showing themselves in some of the larger towns. But these voices, belonging to humble members of the medical profession, were not penetrating enough to reach the ears of those in the seats of power in London, and it was not until the third decade of the nineteenth century that the clamant needs of the workers in the industrial towns began to attract the interest of those who were in a position to take effective action.

¹ Note in connection with this the Greek opinion, said to date from the time of Aristotle, to the effect that "ten thousand persons was the largest community that could be well-governed, fed and kept in health." (Quoted by Hamer from Creighton.)



R. White sculp.

THE ROYAL GIFT OF HEALING

The nature of that action which needed as a preliminary research and planning, will be described in the following chapters of this book. Unfortunately, the period of research and planning was a prolonged one, lasting over the whole of the fourth and most of the fifth decades of the century. The solutions of the sanitary problems of the manufacturing towns in the North of England could only be obtained as a result of independent investigation and enquiry followed by a long period of trial and error during which many mistakes would inevitably be made. Delays and mistakes in sanitary policy would certainly result in the loss of many human lives, and this was recognised by the sanitary reformers and may have accounted for some of the aggressiveness and desire for power of the greatest of them. Hesitations and delays in planning the necessary sanitary measures and passing the appropriate legislation through Parliament were not, however, entirely due to the inherent difficulties of the subject or to differences amongst the reformers as to the kinds of measures which should be taken. There was, indeed, an astonishing unanimity among them. The main problem was to persuade a reluctant Parliament and an equally reluctant people to accept sanitary regulations which might interfere grievously with the liberty of the subject in the interests of that vague and intangible entity—their own health. There seemed at that time to the man in the street—even to some of the highly educated men in the House of Commons—no visible connection between the irksome restrictions which Chadwick and the other reformers sought to impose upon him, and his own health and that of his fellows.

Practically all the ideas and methods of Preventive Medicine had to be worked out *ab initio* during the fifth and sixth decades of the nineteenth century. Pure medicine could look back to the ancients and learn from them. But in spite of their clinical skill—and Hippocrates, even today, would be regarded as a master of diagnosis—the ancient physicians had little or nothing to teach in regard to the prevention of disease, although the Greeks were devoted to the art of physical development. Indeed, while the greater part of mankind regarded it as an act of faith to believe in the supernatural origin of disease, as was the case until the end of the Middle Ages, no progress in the knowledge of preventive medicine, which fundamentally depends upon science and the scientific method, was possible. One of the curiosities of history was the pathetic belief, which lasted until the eighteenth century, that the King's "touch" would suffice to cure scrofula ; and it is recorded that in 1712 Queen Anne touched Samuel Johnson and 200 others in St. James's Palace, without effect as far as that famous author was

concerned. Sir Arthur Newsholme in his *Evolution of Preventive Medicine* mentions that, in 1853, when cholera was threatened, the Presbytery of Edinburgh wrote to Lord Palmerston, then Home Secretary, suggesting that "in the circumstances a national fast should be appointed on royal authority". Palmerston's reply was that "the weal or woe of mankind depends upon the observance or neglect of those (natural) laws" ; and he continues : "The best course which the people of this country can pursue to deserve that the future progress of the cholera should be stayed will be to employ the interval that will elapse between the present time and the beginning of next spring, in planning and executing measures by which those portions of their towns which are inhabited by the poorer classes, and which from the nature of things must most need purification and improvement, may be freed from those causes and sources of contagion, which, if allowed to remain, will probably breed pestilence, and be fruitful in death, in spite of the prayers and fastings of a united but inactive people."¹

One of the most important reasons for the long delay in the beginnings and development of preventive medicine is found in the attitude of the early and mediaeval churches towards science and natural law. Throughout the early Middle Ages there was, on the part of the Church, an antagonism to science which set back the march of human progress several centuries. "In the early Church the interests of theology were too absorbing to leave any room for purely secular studies. If scientific theories were ever discussed it was simply with a view to elucidating some theological question, and the controversy was entirely governed by the existing notions of inspiration."² But the attitude of the all-powerful Church was not merely that of a lack of interest in science. It was, at some periods, bitterly antagonistic to the acquisition of even—theologically speaking—harmless scientific knowledge. This attitude hampered the kind of medical research upon which, centuries later, the science of preventive medicine was founded.

¹ The first of the cholera outbreaks in the history of this country occurred in 1831–32. This epidemic was derived from an outbreak of the disease which arose in Lower Bengal in 1817, proceeding slowly across Asia, and reaching Astrakhan in 1823 and European Russia at Orenburg in 1829. During the following two years it spread to Western Europe and it entered this country through the port of Sunderland in 1831. According to Creighton (*History of Epidemics in Britain*, Vol. II), Asiatic cholera, "which first showed itself on British soil in one or more houses on the Quay of Sunderland in the month of October, 1831," was a "new disease" in a more real sense than anything in this country since the sweating sickness of 1485.

² Lecky, W. E. H., *The Rise and Influence of Rationalism in Europe*, Vol. I, pp. 274–5.

Progress towards the light was almost infinitely slow, with many set-backs ; but the history of scientific research throughout the Middle Ages is ennobled by the names of many men who possessed the sublime courage to face the horrors of a painful death in this world and possible damnation in the next in an attempt to discover fundamental truths. Bruno suffered in this way and Galileo was only saved from death, but not from imprisonment, by a recantation of the Copernican system. Roger Bacon, in this country, suffered fourteen years' imprisonment for what we now consider to be scientific work of the highest order. Roger Bacon, born in 1214, but with scientific ideas centuries ahead of his time, preached the doctrine that natural science verifies conclusions by direct experiment investigating the course of nature and opening to us a knowledge of the past and of the future.

Throughout the course of many centuries knowledge in regard to science and medicine advanced through the labours of countless thinkers, some known to history, many unknown, who faced the essential difficulties of fundamental research and braved the dangers of offending authority. In all advances in particular fields of human knowledge, there are certain discoveries which are recognised as milestones in the path of progress, and in the field of medicine some of these are well defined. The publication by Vesalius of his *De Humani Corporis Fabrica* in 1543 placed the science of anatomy on a firm basis ; but the most brilliant work in the field of medicine in that or any other age was performed by William Harvey (1578–1657) who conducted experiments to show that blood circulated through arteries and veins impelled into the arteries by the action of the heart. Harvey did not demonstrate the passage of blood from arteries to veins through the capillaries and this was left to be discovered by Malpighi in 1661, four years after Harvey's death. Another medical scientist of that time was Thomas Sydenham (1624–1689), who studied infectious diseases and has been described by one of the leaders in the field of modern Public Health as “ the first great epidemiologist.”¹ Other milestones in the progress of medicine proper were the discovery of mediate auscultation by Laënnec in 1818, the introduction of anaesthetics in the early part of the 19th century and, a little later, the beginnings of antiseptic surgery, with which the name of Lister is associated.

Of all scientific discoveries that which influenced preventive medicine and, at a later date, Public Health, most favourably was the germ theory of infectious diseases. Infectious diseases have played a tragic and continuous part in the history of mankind, and,

¹ Newsholme, Sir Arthur, *Evolution of Preventive Medicine*, p. 32.

until the 19th century, human effort had been completely helpless to stay the course of any of them—except perhaps leprosy—often failing to recognise, like the Greeks in the classical age, that they were normally transmitted from person to person, either directly or through the medium of some animate or inanimate object. Of these diseases leprosy, often referred to in Leviticus, is the oldest known to mankind but not by any means the most deadly. This disease is still common in the East but was stamped out in this country during the Middle Ages by the efficient segregation of all known cases. Newsholme refers to the extirpation of leprosy in this country as the first great feat of preventive medicine in prophylaxis.

The second success of preventive medicine was in connection with smallpox, and it is associated with the name of Edward Jenner (1749–1823). Jenner, who was a pupil of the great surgeon, John Hunter, was born in the small town of Berkeley and when a boy happened to hear a milkmaid say : “I cannot take smallpox for I have had cow pox.” He found, on enquiry, that it was an article of faith among milkers that infection with the mild disease cow pox protected against the much more serious smallpox. Jenner in 1796 obtained lymph from the hand of a girl accidentally infected in that part with cow pox and vaccinated a man with it, subsequently attempting to infect him with variolous material obtained from the scabs of a case of smallpox. This experiment—the first of its kind—was successful, it being found impossible on this and on a second occasion to infect the man with smallpox. Jenner made other observations and experiments and produced rigid scientific proof of the soundness of his contention that inoculation of material obtained from a person suffering from cow pox protected against smallpox. As a result his method was in the course of a few years accepted, and mankind had for the first time in its history a weapon of undoubted efficiency against a most deadly infectious disease. Some changes in the actual methods used took place, notably by the use of lymph obtained from calves infected with cow pox instead of the method of arm-to-arm vaccination as used by Jenner. But it was now possible to stamp out smallpox from any country by legislation and by vigorous administration of the law, and some nations, notably Germany in the 19th and 20th centuries, largely succeeded in doing so. Although the first Vaccination Act was passed in this country in 1840 and the first compulsory Act in 1853, subsequent legislation, by allowing exemption to “conscientious objectors,” weakened the original provisions. During the present century, however, the amount of serious smallpox in England has been small and it may be said that the Vaccination Acts 1840 to

1907 have been a success. All this legislation has been repealed by the National Health Service Act, 1946, and since July 5th, 1948, vaccination has no longer been compulsory in this country.

The victory of the sanitarian over leprosy and smallpox constituted two of the major triumphs of preventive medicine. Many other successes were achieved during the period of 92 years which elapsed between the date of the appointment of the first Medical Officer of Health and the onset of the second World War and some account of these will be given in the chapters which follow. It should be noted, however, that the science of preventive medicine and the art which is the application of preventive medicine and is conveniently called Public Health, depend upon the acquisition of new knowledge through the methods of scientific research ; and those of us who are engaged in the practice of Public Health are the first to recognise the debt we owe to the scientist who by his researches provides the weapons to be used in the fight against disease.

The causes of disease, some of which are known and others unknown, are of the most varied character. Indeed it would be true to say that any environment—using the term in its widest sense—may cause disease, if in any respect it is unfavourable to those living in it. Thus diseases may be directly attributed to the kind of house in which a person lives, to the conditions under which he works, and may be directly contracted from the persons with whom he associates. Often a disease, such as pulmonary tuberculosis, is associated with several contributory causes as, for example, housing and nutrition besides infection. When considering, from the point of view of prevention, the origins of the commoner diseases affecting considerable numbers of people in the community, the sanitarian must take account of not only the medical aspects but also the factors associated with the environment. To change beneficially the environment may, in an isolated case, be an easy and expeditious procedure ; usually, however, it is difficult, requiring aid from resources only possessed in sufficient amount by the community. This combination of the skill of the sanitarian and the resources of the community of which the modern expression is the Public Health Service, fulfils the desire of Sir John Simon for the day “ when state-craft and medical knowledge should sincerely take counsel together for the Health of the People.”¹

If, therefore, one tries to assess the broad currents and tendencies which influence, for good or evil, the health of the community one is forced to take notice of a number of factors which at first sight seem too remote to affect, in any particular way, the standards of

¹ Simon, Sir John, *English Sanitary Institutions*, p. iv.

well-being and physical fitness of the people. Few would suppose, for example, that the kind of political system under which a nation lives or the religious practices of the people may exercise a profound effect upon the health of individuals in the community. To a like extent social practices, the kind of industry in which people are engaged, their education, their habits in regard to alcohol, the standards of morality, all exercise their influence upon health. It is, of course, impossible to assess the weight of many of these factors. Some, in the circumstances of English life, have had comparatively little influence ; others have for long periods of time played their part in forming the character of the people and determining their physical make-up.

Historically, the factor which has played a predominant part in determining the course of events in these Islands during the last 150 years has been the rather rapid change from an agricultural economy to an industrial economy, which was given by Blanqui in 1837 the name of the Industrial Revolution. "Industrial conditions," says Blanqui, "were more profoundly transformed than at any time since the beginnings of social life" ; and Gibbins expresses the view that the change was sudden and violent, the great inventions were all made in a comparatively short space of time so that in little more than twenty years all the inventions of Watt, Arkwright and Boulton had been completed, steam had been applied to the new looms, and the modern factory system had begun. It is perhaps a distortion of the historical facts to say that the change brought about by the Industrial Revolution was sudden and violent since the epoch-making inventions referred to were only gradually brought into universal use. But considering how slowly changes took place during the centuries when the economy was predominantly agricultural, the transformation in this country to a largely industrial economy proceeded at an astonishingly rapid rate. Although the Industrial Revolution is generally regarded as taking place throughout the greater part of the nineteenth century, it is interesting to note that the first of the "great inventions"—that of the steam engine by Watt—commenced its development as early as 1769. Few inventions develop independently of the work of other men, and Watt's engine arose out of a study of an engine invented by Newcomen, the essential principle of which was the creation of a difference in atmospheric pressure between the top of the piston and the lower part of the cylinder. Watt's engine depended upon direct steam pressure on the piston and in this way he constructed a machine, with valves, which was much more powerful than the Newcomen engine. At that time the science of

metallurgy had not advanced very far and one of Watt's difficulties, which led to a partnership with Boulton, was that it was found impossible to secure sufficiently skilled workmanship to produce an accurate fit between piston and cylinder. Watt's engine, gradually improved, supplied the motive force of the Industrial Revolution.

Other inventions which stimulated industry were Arkwright's spinning machine, Hargreaves' spinning jenny, Crompton's mule and, most important of all, Cartwright's power loom. These inventions gradually replaced hand-spinning in the cotton mills of Lancashire and led to an enormous expansion in the volume of exports.

Coincident with improvements in the methods of manufacture in the cotton trade important developments occurred in the production of iron and steel.* John Smeaton at the Carron Iron Works in Scotland perfected in 1760 a blowing apparatus by which coke could be used in the production of iron instead of coal ; Henry Cort invented an improved reverberatory furnace and, before the end of the eighteenth century the rolling mill began to produce sheet iron leading to the construction of tanks, boilers, etc.

Progress in invention and in the organisation of industry led to the factory system with all the evils as well as the advantages which such a system entails. Up to nearly the end of the eighteenth century industry, including spinning and weaving, mainly took place in the home. The use of the factory, instead of the home, gave rise to serious problems which have not even yet been completely solved. Probably the most important feature of the factory was the use of the machine, but to the employee the system meant a stricter form of discipline than was the case when he performed his work in his own cottage. The two systems, however, co-existed for many years and the home worker in some industries still plies his particular trade. The factory system, developing and extending year by year, had a profound influence on industry and on the health of the worker ; it brought into being vast urban communities which lived under conditions of squalor and degradation ; and on the political side it produced combinations of workmen, the employers' answer in the Combination Acts, trade unions recognised by law, strikes and the modern Labour Party. Many of the evils inherent in factory organisation as it developed during the early part of the nineteenth century were slowly mitigated as the result of much legislation. The Factory Acts play an important part in the history of Public Health.

In the Middle Ages, and even during the eighteenth and nineteenth centuries, agriculture was the most important industry and the size

of the population of this country, in the absence of imported food, depended upon the efficiency of the cultivator and upon the methods he adopted. In mediaeval England the most characteristic method of cultivation, established throughout the south and midlands, was that of the open field. Under this system fields were not enclosed and each farmer cultivated a number of strips of land, each half an acre to one acre in size. Trevelyan says of this system that it was economically sound as long as the object of each farmer was to raise food for his family rather than for the market. The method of strip-cultivation lasted, in its essentials, down to the time of the modern enclosures. The enclosure of arable and pasture land into fenced or hedged fields had been going on during the greater part of the Middle Ages and by 1820 this "agricultural revolution" was practically complete. While this process was highly disadvantageous from the point of view of the peasant, who lost both his land and his independence, it encouraged the scientific rotation of crops and pasture and enabled stock, of a size and weight never before known, to be reared. Thus the efficiency of agriculture and stock-rearing was increased and this enabled a larger population than ever before to be supported. This is evident from a study of the population figures—given for England and Wales—which are estimates up to 1801 and from then onwards are actual Census returns. In the year 1700 the population is estimated as 5,475,000, in 1750 6,467,000, while in 1801 the Census return gave the total population as 8,892,000. Little food was imported up to that time and the figure given by the 1801 Census probably indicates the maximum population which the land of England and Wales could support at that period, granted the prevailing standards of cultivation. A considerable increase of population would only be possible if either food or fertilisers could be imported; and it is one of the most significant features in the industrial history of the nineteenth century that the rapidly multiplying population began to depend for its support on the export of manufactured articles in return for vitally necessary food imports.

The modern town-dweller is so used to the social services that he forgets that most of them are of comparatively recent growth. Nevertheless, help given by the State to the worker and his dependants in times of misfortune due to such causes as illness and unemployment now has a definite effect upon the health of many millions of the population. During the whole of the nineteenth century, however, provision for the welfare of the individual was limited to the Poor Law which was administered with a rigour and harshness truly in accordance with the spirit of the times. Up to 1834, when the

Poor Law Amendment Act was passed, the unit of administration, as in the time of Queen Elizabeth, was the parish which frequently did not possess the resources to deal with its indigent poor. Moreover the laws of settlement restricted the mobility of labour because parishes where work was plentiful were afraid to employ persons from outside in case they became chargeable. As Usher remarks, "The unfortunate effect of such regulations at a time of great social change can hardly be imagined."¹ It was to deal with this situation that the Poor Law Commission was appointed in 1832, and the 1834 Act was the first result of its labours. Prior to 1834 Poor relief, administered by the parishes, was dominated by the Act of Settlement passed in the reign of Charles II. As Trevelyan justly observes : "Nine-tenths of the people of England, all in fact who did not belong to a small class of landowners, were liable to be expelled from any parish save their own, with every circumstance of arrest and ignominy, however good their character and even if they had secured remunerative work."² But in the circumstances obtaining in the third and fourth decades of last century, the immobilisation of workers within their own parishes was in complete conflict with the requirements of industry ; and the old Poor Law, the purpose of which was to relieve destitution, became one of the causes of unemployment and of the stagnation of industry. Apart, however, from the wholly evil influence of the Laws of Settlement, Poor relief had for many years been administered in anti-social ways. The Speenhamland system is now well known. It arose out of a meeting of the Berkshire magistrates held at Speenhamland in May, 1795, for the perfectly justifiable purpose of fixing a minimum wage for labourers in the county in relation to the price of bread. This purpose was not achieved and the justices were persuaded to supplement wages out of the rates. This system was year by year extended until it finally covered a great part of rural England. One effect of the Speenhamland award was that the landowner and the large farmer were able to obtain labour at cheap rates and it pauperised the labourer. "The moral effect was devastating to all concerned."³

Rapid social changes are always difficult, and the England of the 'thirties and 'forties of last century, in the transition period between a predominantly agricultural economy and an industrial economy, was suffering severe stresses and strains both in the rapidly growing

¹ *Industrial History of England*, p. 365.

² *English Social History*, p. 278.

³ *Ibid*, p. 469. The Speenhamland award was made under the provisions of Gilbert's Act, 1782.

towns and in the country. Some of the evils of this transitional period could have been mitigated by wise legislation but, until the 'thirties, there were singularly few laws passed for the purpose of abating current discontents. This is not to say that nothing was being done. Many persons were impressed by the urgent need for dealing with the admitted social evils of the time and it was fitting and proper that the first steps to this end were taken in the political sphere. The passing into law of the Reform Bill in 1832 was preceded by an agitation in the industrial districts of England which in many places threatened the civil order, and there is little doubt that Parliament, including the Duke of Wellington, was overawed by the public clamour. It is not that a measure which merely enfranchised "ten pound householders" was in any sense of the term revolutionary or even democratic, but the provisions of the Act doing away with "rotten boroughs" transferred some modicum of power from the landed interests into the hands of the industrialists and thus modified a system which was part of the history of England in the Middle Ages. The second political move made at that time was the passing of the Municipal Corporations Act, 1835, and this was ultimately to prove of importance to Public Health since the municipal corporations were chosen as the local bodies responsible for administering the various Public Health Acts enacted later on in the century. The municipal franchise was based upon a residential qualification without the restriction in regard to "ten pound householders" contained in the Reform Act and as a consequence all ratepayers were accorded the vote. As in the case of the "rotten boroughs" the nominated members of borough councils were replaced by elected members who, mainly radical in political opinion, worked hard in the cause of municipal reform in their areas.

From the social point of view the first-fruits of the Reform Act were the appointment by Parliament in 1832 of a Commission of Inquiry into the working of the Poor Laws, and this body, with which Edwin Chadwick was associated, presented to Parliament drastic proposals for the reform of the system. It was, however, found impossible, in the state of political opinion at that time, to persuade Parliament, even a reformed Parliament, to pass all the proposals of the Commission, and the Poor Law Amendment Act, 1834, was a compromise which, nevertheless, embodied several fundamental changes. The country had long realised that the parish was far too small a unit for Poor Law purposes and that only an amalgamation of parishes into large areas would be adequate to carry the local burdens of caring for the destitute poor. Moreover, a grouping of

parishes was essential if one of the primary items of the Commission's policy, namely, the building of workhouses, was to be carried out. Chadwick, at first Assistant Commissioner and then Commissioner, was the principal exponent of these views, and he also wished to reduce the local autonomy of the parishes and create instead a strong centralised department of Government which would supervise the work of the authorities at the periphery. He also suggested that the Act of Settlement should be abolished or radically amended. Parliament accepted some of Chadwick's ideas and rejected others, and the main provisions of the Poor Law Amendment Act, 1834, were :—(i) the creation of Poor Law Unions under boards of guardians, (ii) the building of workhouses into which paupers were admitted under a rigid system of classification which separated husbands from wives and parents from children, and (iii) the discontinuance of outdoor relief either by way of money or of food. Boards of guardians were democratically elected but worked under the constant inspection of the officers employed by the Poor Law Commission which maintained common standards throughout the country.

Undoubtedly the new Poor Law system operated harshly and the labouring classes in town and country regarded it as odious and tyrannical. Its object was to force employable adults to maintain themselves instead of, as was the case previously, to look to the State for part or the whole of their maintenance, and in this it was successful. Succeeding generations of poor people learnt to look upon the receipt of Poor relief as a disgrace and pauper burial as shameful.

Edwin Chadwick.—The driving force behind the Poor Law Commission was Chadwick, who was born in Manchester in the year 1800. While a young man he lived and worked with Jeremy Bentham at Queen's Gate, London, acting as his secretary and helping him in the preparation of the famous Constitutional Code. Chadwick was called to the Bar in 1830, and was appointed an Assistant Commissioner of the Inquiry into the State of the Poor Laws in 1832, becoming a full Commissioner the following year. He became Secretary of the Commission in 1834. In 1834, however, the Commission changed its nature and became a semi-permanent Department of State, charged with the duty of bringing into operation the changes brought about by the Poor Law Amendment Act. Chadwick was also the main author of the Report on the Sanitary Condition of the Labouring Population of Great Britain, published in 1842,¹ and, after the passing of the Public Health Act, 1848, which

¹ This was followed in 1843 by a Report (also by Mr. Chadwick) on the results of a special inquiry into the Practice of Interment in Towns.

created the General Board of Health, he was a member of that body from 1848–54. He retired in 1854, and was made a K.C.B. in 1889, a year before his death.

In sum total, history has done less than justice to Chadwick. Although his work is copiously referred to in a number of books which treat of social events in the first half of the nineteenth century, no full-scale biography of this remarkable man has yet been written.¹ He receives much prominence in Benjamin Ward Richardson's *Health of Nations*, and his work and achievements are sympathetically described in Simon's *English Sanitary Institutions* and Hutchins' *Public Health Agitation*. But even during the present generation, when an appraisal of the influence of Chadwick on social development is historically possible, no full account of his life and work has appeared. For one thing, he did not possess a very attractive personality. One writer who does ample justice to Chadwick's energy and efficiency says of him "No one ever accused Chadwick of having a heart." Because of certain temperamental weaknesses he did not work very well in harness with his fellows. Dogmatic and overbearing as he was, Chadwick forced himself to the first place both in the Poor Law Commission and at the General Board of Health; and, when trouble arose about the latter body, he was inevitably cast for the rôle of scapegoat.

Chadwick, greatly influenced by Jeremy Bentham in his early years, was not an uncritical advocate of the doctrine of *laissez faire*. It was, indeed, impossible to be at one and the same time a sanitary reformer and accept the current beliefs about the non-interference by the State in industry or in the daily life of the people. Freedom to some, as Chadwick clearly saw, meant oppression of the many. The harsh attitude of those in the seats of power towards any alleviation of the lot of the wage-earner, whether living in the insanitary areas of the great towns or on a pittance of 8s. a week in the country, seems almost unbelievable to those of the present generation. In them *laissez faire* became plain selfishness and inhumanity. Nevertheless, as the sanitary reformers saw the situation in the fourth and fifth decades of last century, it was into the hands of the very people who had, in so many cases, oppressed the working classes that additional power might be placed under Poor Law and Public Health legislation. It seemed, therefore, essential to Chadwick that the inevitable local control of the new services should be checked and supervised by a strong central

¹ A short life of Chadwick by Maurice Marston, was published in the Road-maker Series by Leonard Parsons in London, and by Small, Maynard & Co. in Boston, U.S.A., in 1925.

authority. Supervision of local services by a central department could only be effectively exercised by a system of inspectors; and it is one of Chadwick's claims to fame as an administrator that he was the first to institute this method of central control over local services.¹ It applied in the first place to the Poor Law, which was rigorously inspected until well after the end of the century, then to the Public Health Service and, after 1870, to the Education Service. As a method, it was, of course, used extensively in connection with Factory Legislation. The system of Government inspection had the effect of stimulating progress and establishing common standards throughout the country. But it became highly unpopular amongst the independently-minded local authorities of that early period.

Nevertheless, the appointment of paid officials to undertake inspectorial duties, acting as the eyes and ears of the Central Department, was a step of great and permanent importance. Chadwick had discovered a technique which tended more and more to increase the power of the Government, to some extent at the expense of that of the local authorities. From these early beginnings rose the modern Civil Service; while the effect of the new legislation of the 'thirties and 'forties increased the numbers and added to the powers of the local authorities' officials. Chadwick was the advocate, above all, of administrative efficiency. If it was necessary, as he had proved it to be, to interfere with personal rights and the rights of property in the interests of Public Health, this interference must be carried out by skilled and experienced officers working under the authority of properly drafted Acts of Parliament.

The principle which lent direction and driving force to Edwin Chadwick's later work was the "sanitary idea". He explains this principle at length in the Report on the Sanitary Condition of the Labouring Population of Great Britain (see pp. 18-19 of this book), and it was unanimously accepted by such of the earlier reformers as Southwood Smith and Simon and by later administrators of the Public Health Service like Buchanan, Power and Thorne Thorne. The principle that the material environment exercises a profound effect upon the physical and, indeed, the mental well-being of the individual appears to the sanitarians of the present day, in the light of a hundred years of statistical evidence, so well demonstrated by experience that it is accepted universally without question. But at the time when Chadwick was presenting the case for sanitary improvement this thesis was strongly opposed by many,

¹ The view that paid officials of the central government should replace the unpaid justices of the peace, as far as their administrative functions were concerned, was a conception common to all the Benthamites.

some on grounds of principle, and others because they were influenced by self-interest.

It was in many ways a tragedy that at the height of his intellectual powers, at the early age of 54, Chadwick was dismissed from office and took no further part in the administration of the social services of which he was the creator. In the sphere of lay administration he had no successor of equal calibre until the day of Sir Robert Morant.

In 1838 the new Poor Law Commission wrote a letter to Lord John Russell, the Home Secretary, in which they reported, *inter alia*, that they had employed three medical inspectors to enquire into the prevalence and causation of preventable sickness in the Metropolis and they expressed the opinion that "the expenditure necessary to the adoption and maintenance of measures of prevention would ultimately amount to less than the cost of the disease now constantly engendered."

The three medical practitioners referred to were Dr. Neil Arnott, Dr. James Phillips Kay and Dr. Southwood Smith. *Arnott* (1788–1874) graduated M.D. at Aberdeen in 1814, became Physician Extraordinary to Queen Victoria in 1838, and was a member of the Senate of London University. He was interested in the incidence of fevers and in Preventive Medicine and his services were employed by the Poor Law Commission in 1840.

James Phillips Kay (1804–1877), afterwards Sir James Kay-Shuttleworth, graduated at Edinburgh in 1827, was appointed an Assistant Commissioner of the Poor Law in 1835, and became an Assistant Secretary in the Education Department of the Privy Council in 1839.

Thomas Southwood Smith (1788–1861), who was one of the chief originators of the English Public Health system, graduated in medicine at Edinburgh in 1816 and was appointed Physician to the London Fever Hospital in 1824. He became a member of the Central Board of the Factory Commission in 1833 and of the Children's Employment Commission in 1840, and was made a Poor Law Commissioner in 1847. In 1848 he was appointed medical member of the General Board of Health and, in 1850, the additional member under the Metropolitan Interments Act. Southwood Smith was, with Chadwick, a disciple of Jeremy Bentham and was the author of the *Philosophy of Health* and of many official reports on

Public Health matters.¹ Simon says of him that he was much respected as a man of thought and benevolence. His work in connection with the formation of the Health of Towns Association in London is referred to in Part I, Chap. I. Southwood Smith's official life was closely bound up with that of Chadwick, and they retired from the General Board of Health at the same time, thus ending their careers together.

The surveys undertaken by these eminent medical practitioners were confined to London, but in 1839 the Government, on the motion of Dr. Blomfield, Bishop of London, in the House of Lords, instructed the Poor Law Commission to make inquiries in regard to the health of the working population throughout England and Wales. Later, these inquiries were extended to Scotland. During the following three years a vast amount of evidence was accumulated throughout the United Kingdom and this formed the basis of the Commission's Report on the Sanitary Condition of the Labouring Population of Great Britain, published in 1842.² The Report which, by Her Majesty's Command, was laid before Parliament, was presented in three volumes—two being local reports covering respectively England and Scotland, while the third, founded mainly on them, treated generally of the sanitary condition of the labouring population of Great Britain, and of the means deemed suitable for improving it. The English local reports from the Assistant Commissioners and others, together with a large number of detailed answers from the Boards of Guardians, totalled twenty-four; and the synoptical volume, entitled General Report on the Sanitary Condition of the Labouring Population of Great Britain, was the work of Chadwick and was issued by the Commissioners as distinctively his. Some of the conclusions which Chadwick

¹ Southwood Smith's evidence before the Health of Towns Commission (First Report, Vol. 1) gives a moving picture of poverty and disease in the East End of London. Like Chadwick, he believed that it was beyond the power of the individual amongst the poor to change his environment, and that this could only be done by the community.

² In the New World an equally important event, occurring some years later, was the publication of the famous Report of the Sanitary Commission of Massachusetts, 1850, by Lemuel Shattuck and others. A facsimile edition of this report has been issued by the Harvard University Press. In the correspondence of Duncan of Liverpool there is a letter to Shattuck dated December, 1849, in which the writer congratulated the great American sanitary reformer on the active part which he had taken in the "Sanatory Cause."

found to be established by a consideration of the evidence contained in the first two volumes are as follows:—

- “That the various forms of epidemic, endemic and other disease caused, or aggravated, or propagated chiefly amongst the labouring classes by atmospheric impurities produced by decomposing animal and vegetable substances by damp and filth, and close and overcrowded dwellings prevail amongst the population in every part of the kingdom, whether dwelling in separate houses, in rural villages, in small towns, in the larger towns—as they have been found to prevail in the lowest districts of the metropolis.”
- “That such disease, wherever its attacks are frequent, is always found in connection with the physical circumstances above specified, and that where those circumstances are removed by drainage, proper cleansing, better ventilation and other means of diminishing atmospheric impurity, the frequency and intensity of such disease is abated; and where the removal of the noxious agencies appears to be complete, such disease almost entirely disappears.”
- “That the formation of all habits of cleanliness is obstructed by defective supplies of water.”
- “That the annual loss of life from filth and bad ventilation is greater than the loss from death or wounds in any wars in which the country has been engaged in modern times.”
- “That the ravages of epidemics and other diseases do not diminish but tend to increase the pressure of population.”
- “That in the districts where the mortality is the greatest the births are not only sufficient to replace the numbers removed by death, but to add to the population.”
- “That the younger population, bred up under noxious physical agencies, is inferior in physical organisation and general health to a population preserved from the presence of such agencies.”
- “That these adverse circumstances tend to produce an adult population short-lived, improvident, reckless, and intemperate, and with habitual avidity for sensual gratifications.”

And as regards the means by which the sanitary condition of the labouring classes may be improved:—

- “That the primary and most important measures and, at the same time, the most practicable, and within the recognised

province of public administration, are drainage, the removal of all refuse of habitations, streets and roads, and the improvement of the supplies of water."

"That the expense of public drainage, of supplies of water laid on in houses, and of means of improved cleansing would be a pecuniary gain, by diminishing the existing charges attendant on sickness and premature mortality."

"That, for the protection of the labouring classes and of the ratepayers against inefficiency and waste in all new structural arrangements for the protection of the public health, and to ensure public confidence that the expenditure will be beneficial, securities should be taken that all new local public works are devised and conducted by responsible officers qualified by the possession of the science and skill of civil engineers."¹

These recommendations are, it is thought, well worth quoting because they state the principles on which sanitary reform during the next fifty years was based. They constituted the pure milk of the word to the early sanitarians and being, for the most part, principles of universal application they are, in general, as valid today as they were when they were enunciated. As will be mentioned in the following chapter, the recommendations of the Poor Law Commission, although generally accepted, only came into operation very gradually and many years were to elapse before the cleanliness of the towns became assured. There were, at the outset, the political implications of Chadwick's proposals to be considered, because they involved heavy expenditure and because it would be necessary, if they were to be put into operation, to call into being a new branch of government. Accordingly, Sir Robert Peel, as Prime Minister, and Sir James Graham, as Home Secretary, arranged for the whole question to be placed before a Royal Commission and this was constituted by a patent of May 9th, 1843, with the Duke of Buccleuch as Chairman.² Writing in 1890, Sir John Simon observes that of the original members of the Commission only two had survived, Sir Lyon Playfair and Sir Richard Owen. Although Chadwick was not a member of this Royal Commission, but was, strictly speaking, a witness before it, he was consulted by the Chairman and Secretary at every stage and it is known that he

¹ Report of an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain, 1842, Synoptical Volume (by Mr. Chadwick), pp. 369-71.

² A Commission for Inquiry into the State of Large Towns and Populous Districts—often referred to as the *Health of Towns Commission*.

drafted the First Report and the Recommendations of the Second. At the end of a very exhaustive investigation the Commission made a series of proposals with a view to the drafting of legislation. One of the most important of these proposals was that the Crown should have power to inspect and supervise the execution of all general measures for the sanitary regulation of large towns and populous districts. This recommendation involved, of course, the setting up of a new Government Department. The Commission also recommended that the necessary arrangements for drainage, paving and cleansing and for the provision of sufficient water supplies should be placed, in each locality, under one administrative body. Up to that time drainage had been in the hands of one body and street cleansing in those of another, while water supplies were generally provided by private companies. All this was to be changed when the recommendations of the Royal Commission came into effect. The first report of the Commission was laid before Parliament on June 27th, 1844, and the second on February 3rd, 1845.

For political reasons, legislation to implement the unanimous recommendations of the Health of Towns Commission was delayed. A Government Bill for the improvement of the Public Health was introduced into the House of Commons by Lord Lincoln in the session of 1845, but this measure was deferred owing to the resignation in 1846 of the Prime Minister on the vital question of the Repeal of the Corn Laws. The main Bill did not, in fact, become law until 1848, but opportunity was taken in the 1846 session to pass an Act of limited application called the Nuisances Removal and Diseases Prevention Act ; and in the same session the famous Baths and Washhouses Act came into being.¹

Registration of Births and Deaths

The Births and Deaths Registration Act was passed in 1836 in accordance with the recommendations of a Select Committee appointed by the House of Commons on March 28th, 1833, which reported on August 15th, 1833, and as a result of its operation there came into being a department which was organised for the purpose of supplying to the Government, to the local authorities and to others interested, statistical information of the most essential character by the use of which the value of measures taken for

¹ The first public baths and washhouse establishment was opened in Liverpool in Upper Frederick Street in 1842, and the idea owed its inception to Mrs. Catherine Wilkinson who, living in a poor quarter of the borough, came to see the need for this provision during the cholera outbreak of 1832. Mrs. Wilkinson and her husband were appointed the first superintendents of the new establishment.

improving the health of the people could be assessed. The purpose of the Act was two-fold : (i) to set up the General Register Office and to appoint a Registrar-General, and (ii) to require the compulsory registration of all births and deaths in due form.¹ At the inception of this Department, the first Registrar-General was Mr. T. H. Lister ; but he was succeeded in 1842 by Major George Graham who proved to be a capable administrator. There is little doubt, however, that the fame which this Department attained during the next forty years was mainly due to the pioneer work in vital statistics performed by Dr. William Farr who was appointed Compiler of Abstracts in 1839. Farr's appointment to this office was due, it is believed, to Chadwick, who early recognised the merits of a medical statistician who, later, came to be regarded as the father of Vital Statistics. Farr's first published vital statistics were contained in a letter attached to the first annual report of the Registrar-General for the year 1841 ; and this practice was continued in connection with succeeding reports. Many more of Farr's reports were published, including weekly returns relating to the vital statistics of the Metropolis, and special reports. One of the most important of these special reports was that submitted to the Home Secretary (Sir George Grey) by the Registrar-General on the cholera outbreak in 1848-9. This report covers 300 pages and it contains details of cases and deaths in every district in England and Wales.

Farr was never appointed Registrar-General, though he desired this office and deserved it. He received many marks of distinction, including the C.B., the Fellowship of the Royal Society, the honorary degree of M.D., of New York and the honorary degree of D.C.L. of Oxford. His retirement took place in 1879, and he died on April 14th, 1883. In 1885 some of his reports were collected and published by the Sanitary Institute of Great Britain in one volume.²

Medical Statistics

The debt which his own generation owed to Farr was a great one. His mortality statistics, becoming more accurate and comprehensive as the years went by, constituted the ammunition used by Simon and others in the campaigns against disease in the home and in the factory. The searchlight of statistical analysis, in his

¹ The Act came into operation on July 1st, 1837.

² The first known weekly bills of mortality were compiled in London in 1532. The most distinguished predecessor of Farr in this country was Captain John Graunt, described as "Citizen of London," who published in 1662 the first edition of *Natural and Political Observations Mentioned in a following Index, and made upon the Bills of Mortality*

hands, showed up in plain relief the plague spots in the social and industrial system. But for the work of Farr the efforts of the sanitary reformers would have lacked direction and it would have proved impossible to assess the value of the successive steps taken during the second half of the nineteenth century to reduce mortality. The present generation is indebted to Farr because largely owing to his constructive reports which greatly stimulated sanitary progress, we have inherited a relatively satisfactory urban environment. Raymond Pearl refers to Farr as "the greatest *medical* statistician who has ever lived"; and Greenwood, who has done more to advance the study of Vital Statistics in this country than any other since Farr, says of his work that it "has on it the seal of all supreme achievements; it is indestructible."

Although the science of statistics is founded on mathematical analysis, and many mathematicians from the early part of the eighteenth century onwards such as de Moivre, Laplace, Gauss, Bessel, Quetelet and Todhunter have contributed to its development, the medical statistician has not, as a rule, been a mathematician. It is therefore all to the credit of such medical statisticians as Farr, Stevenson, Greenwood and Brownlee that, trained in a very different school of thought, they have subjected themselves to the mental discipline required for the understanding of the mathematical basis of their subject.

The author feels that it would be ungracious, even in such a slight reference to the subject of medical statistics as is contained in this section, not to mention two scientists who made great advances in our knowledge of statistics as applied to biology. Sir Francis Galton (1822–1907) may be regarded as the founder of the science of biometry. His interest in the work of his cousin Charles Darwin led him to the view that little progress could be made in research into hereditary characteristics unless data derived from the detailed investigations made by Darwin (and later by Galton himself) were subjected to statistical analysis. His book *Natural Inheritance*, regarded by Pearl¹ as containing the most important part of Galton's work, laid down the general statistical methods to be applied in biological investigations. Professor Karl Pearson (1857–1936), whose most widely-read book is *The Grammar of Science*, was a mathematician who, following Laplace and Gauss, made notable

¹ See Raymond Pearl's *Medical Biometry and Statistics* and M. Greenwood's *Epidemics and Crowd Diseases*. Professor Greenwood's recent book *Some British Pioneers of Social Medicine* contains an interesting and well-documented account of the early pioneers in medical statistics. A book on this subject of great value to the medical practitioner with only an elementary knowledge of mathematics is Bradford Hill's *Principles of Medical Statistics*.

developments in the theory of probability. Pearson introduced the important idea of skew frequency curves and this method has been of great service to the medical statistician dealing with phenomena influenced by so many different, and often indeterminable, causes.

Factory Legislation from 1802 to 1847

The influence of conditions in industry on the health of the worker is so great that it is necessary at this stage to consider the early measures taken by the Legislature to regulate hours of labour in the case of children working in factories. This was a particularly grave problem at the beginning of the century when children began their working life at the age of five and were obliged to toil at the loom for fourteen to sixteen hours a day. The use of children's labour was not an abuse originated by the Industrial Revolution. It was a product of the Elizabethan Poor Law which had commenced the system of the apprenticeship of destitute children to various trades ; and this system continued until well into the nineteenth century. Apart from the apprenticeship of destitute children to employers, it was the common practice in domestic industry to use the services of all members of the family, including toddlers two or three years old, but this was a less harmful custom than the employment of young children in factories as parental care was not entirely subordinated to the claims of production. But this was not always true and some writers express the view that parents were the hardest of taskmasters and that, in many cases, the lot of children in factories was less arduous than under the domestic system. One of the earliest amongst the medical profession to point out the evils of the employment of children in factories was Dr. Thomas Percival (1740–1804), of Manchester, and it was on his advice that the magistrates of that borough passed a resolution stating that in future they would refuse to allow indentures of apprenticeship in the case of Parish children if they were required to work at night or more than ten hours in the day. Percival and his colleagues were instrumental in forming the Manchester Board of Health which passed a series of resolutions having as their object the improvement of conditions and the reduction of hours of work for all employed in factories.¹

The first attempt at legislation designed to improve the conditions of work in factories was Peel's Health and Morals of Apprentices Act, 1802. Some of the provisions of this Act were : the working

¹ The voluntary Manchester Board of Health was founded by Percival, Ferrier and other physicians associated with the Royal Infirmary in January, 1796, after the occurrence of a severe outbreak of typhus in a cotton mill at Radcliffe.

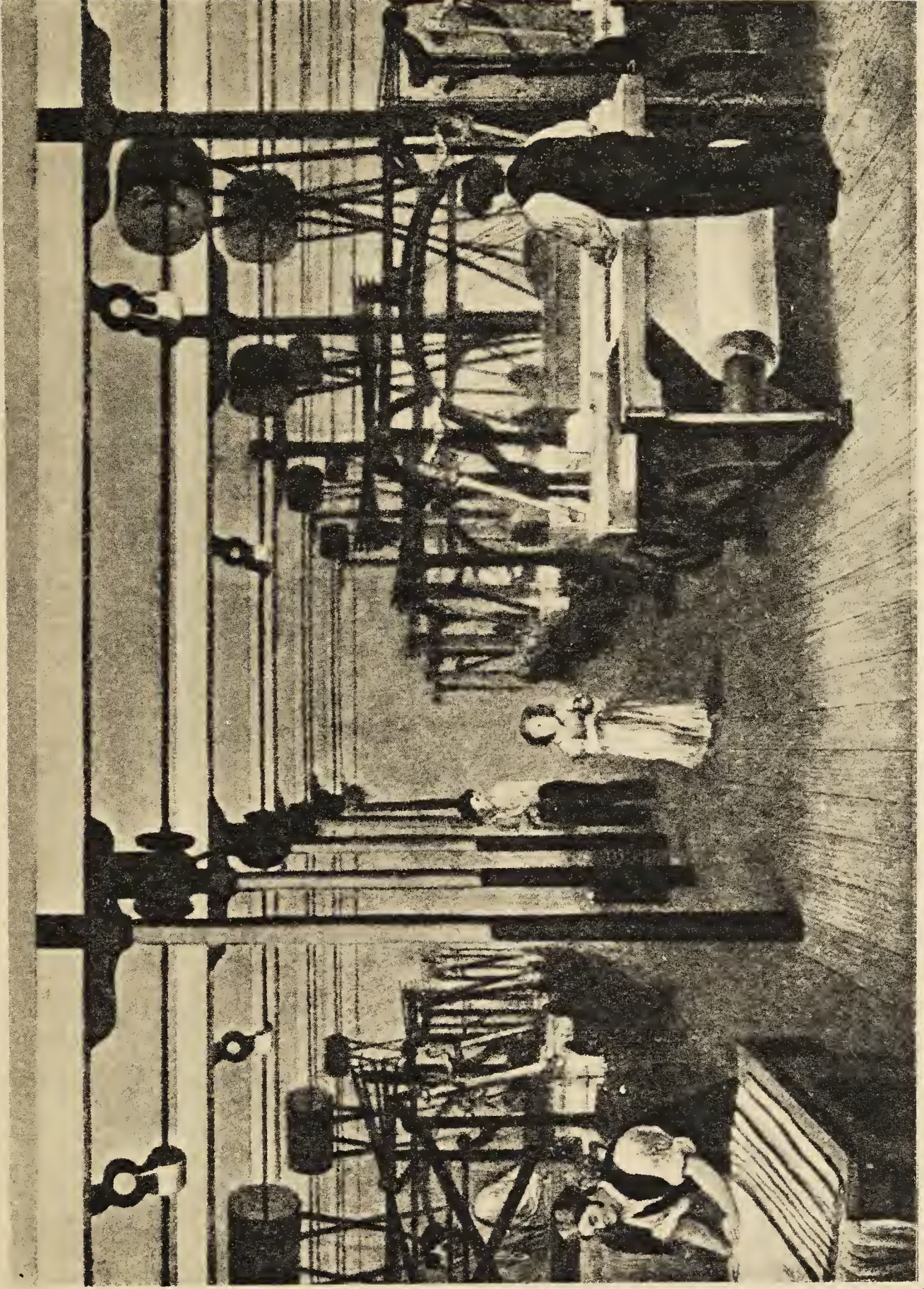
hours of apprentices were limited to twelve a day, and night work was gradually to be discontinued; apprentices were to be instructed in reading, writing and arithmetic; factories were to be whitewashed twice a year and apprentices were to attend church at least once a month. Some attempt was made to arrange for the proper administration of the Act by the appointment by the justices of two of their number, one of whom was to be a clergyman, to visit the factories. Although this Act, which is regarded by some writers as the first of the Factory Acts, was completely ineffective, it established the principle that the State had some interest in the health and welfare of the factory worker; and it was important that such a principle should be accepted by the Legislature since industry was more and more gravitating into the factories which, as steam power came into general use, began to increase in size and employ many more workers.

This was not, however, the first occasion on which attempts had been made to alleviate the lot of the workers in industry and especially the apprentices. In a carefully written book of two volumes by the Rev. Samuel Kydd,¹ published by Simpkin, Marshall & Co. in 1857, entitled *The History of the Factory Movement* there is an account of the humane efforts of Mr. David Dale, a Glasgow manufacturer, who established a cotton-mill near the falls of the Clyde in Lanarkshire in 1784, to provide satisfactory conditions for all his workers. The opinion is expressed in the book referred to that "Mr. Dale's was one of the most humanely conducted factories in the empire."

Factories with which Sir Robert Peel himself was associated appeared to have been equally well conducted. Indeed it seems likely that the personal experiences in industry of the author of the Health & Morals of Apprentices Act had much to do with the inception of this piece of legislation.

From the standpoint of the health of the worker the first quarter of the nineteenth century is a period of painfully slow progress, relieved only by the work of such employers as Dale, Peel and the famous Robert Owen, who, in his own factory at Lanark, put into practice his ideas of satisfactory conditions for the workers. Elsewhere the employment of child labour in factories continued, and it was not until 1819 that the devoted efforts of Owen, aided by Peel, attained a measure of success in the passing of an Act (59 Geo. III cap. 66), which fixed the age limit for the employment of children in cotton mills to nine years, and forbade any person under the age of sixteen years to be employed for more than twelve hours

¹ The author concealed his identity under the pseudonym of "Alfred".



AN EARLY COTTON FACTORY

a day, exclusive of meal times. This was much less than Robert Owen had demanded ; but the weakest point in this Act, as in the Act passed seventeen years previously, was that it did not provide for the appointment of paid inspectors. It remains a reproach to the statesmen and manufacturers of that time that they were willing to employ children of a tender age in cotton and woollen mills and when legislation was introduced fought so hard to have the minimum age for employment fixed as low as possible.

Many of the facts in regard to the employment of young children in the mills were brought out in evidence before Peel's Select Committee in 1816 and a House of Lords Committee in 1818.

No further progress was made until 1825 when the Act of that year (6 Geo. IV cap. 63), prescribed that no person under sixteen was to work more than twelve hours a day, exclusive of an hour and a half for meal times, with nine hours' work on a Saturday. It was not until 1830 that the movement for factory reform, initiated by Richard Oastler and Michael Sadler and continued by Anthony Ashley Cooper, Lord Ashley (later the Earl of Shaftesbury), began to gain momentum. Sadler, in December, 1831, introduced into the House of Commons a Ten Hours' Bill and this, being strongly opposed by the manufacturing interests, was referred to a Select Committee. The minutes of evidence of this Committee, of which Sadler was chairman, made out an unassailable case for drastic legislation to improve conditions in factories. Before legislative action could be taken on the Report, Parliament was dissolved and in the ensuing election Sadler lost his seat.

After some hesitation, Lord Ashley agreed to carry on the struggle.¹ Further delays occurred from the appointment of a Commission (of which Chadwick was a member) to make an extensive survey of conditions throughout the country, and finally Lord Althorp's famous Factory Act, 1833, was passed.² It became famous not so much because of the generosity of the conditions granted to the factory workers but because it contained the provision, wanting in all previous legislation, that a central staff of paid inspectors should be appointed who would be independent of the

¹ Hodder, Edwin, *Life and Work of the Seventh Earl of Shaftesbury, K.G.*, Vol. I, pp. 147-9. "But how could I refuse?" Hodder, Vol. II, p. 253.

² A Factory Bill introduced early in 1833 by Lord Ashley with the object of enforcing a ten hours' day for all workers under eighteen was defeated by the Government on July 18th. A Government Bill, based on the recommendations of the Commission and drafted by Chadwick, was introduced in the House of Commons on August 9th by Lord Althorp. It became law on August 29th. See M. W. Thomas's *The Early Factory Legislation*, chap. 5, for a full account of the circumstances attending the passage of this Act.

factory owners and free from local pressure and influence. Power was given to inspectors to enter any factory at work, to examine children, to make such inquiries as they thought fit, and to make such rules and orders as they considered necessary.

One of the great advantages of the appointment of inspectors who were Civil Servants was that henceforward Parliament, when considering further factory legislation, would have at its disposal an impartial source of information in the reports of these officers. In order that there should be uniformity in administration, arrangements were made for the factory inspectors to meet twice a year in London to discuss various problems and to draw up reports. These reports were printed and submitted to Parliament ; and in this way the education of members in regard to the need for further improvement of the conditions in industry began.

In the first place four factory inspectors were appointed. The fact that they were men of high social and educational standing helped to make them acceptable to employers.¹

The Factory Act, 1833, was, however, only a beginning and the reformers, led by Lord Ashley, continued the agitation for the legislative limitation of the hours of work of women as well as children. The campaign throughout the country for a ten hours' day was one of the most strenuous and prolonged of all the agitations for reform in English history. Other needs of the workers showed themselves during this period and were included in the demands of the groups formed throughout the industrial areas, primarily for the purpose of advocating the ten hours' day. Prominent amongst these needs was the subject of the fencing of machinery and the provision of safeguards against dangers to health. The reports of the inspectors had repeatedly drawn attention to the need for some legislative control of conditions in factories giving rise to danger to health or to life and limb. Comparatively little Parliamentary opposition was experienced in connection with the Factories Regulation Act, 1844, the main purpose of which was to prescribe a number of elementary safety precautions in relation to machinery.

¹ Perhaps the best known of the factory inspectors appointed late in 1833 was Leonard Horner (1785-1864), whose reports largely influenced legislation for many years. Horner was in early life educated as a geologist and in 1808 he was elected a Fellow of the Geological Society becoming later President of that body. He displayed throughout his career an interest in educational reform, and was one of the founders of the Edinburgh Academy. Became Warden of London University in 1828. Was appointed in 1833 one of the Commissioners to inquire into the employment of children in factories (the first of the Children's Employment Commissions), and later in that year accepted an appointment as a factory inspector.

Early in 1846 Lord Ashley introduced into the House of Commons his Ten Hours' Bill. This Bill, however, suffered the usual fate of factory legislation and was strenuously opposed. While this Bill was before the House, Lord Ashley, who had presented himself to the electors of Dorsetshire as a result of his support of Sir Robert Peel's free trade measures, found himself without a Parliamentary seat as he was not re-elected, and Mr. Fielden moved the second reading on April 29th. The adjourned debate on the second reading was rendered noteworthy by an eloquent speech by Mr. (later Lord) Macaulay, the historian, who pleaded for the claims of humanity as against the demands of industry.¹

The Factory Act received the Royal Assent on June 8th, 1847, and thus for the first time the hours of work of women and young persons employed in textile manufacture were regulated by law.

Most of the industrial population was not covered by the Factory Acts and conditions of employment in many industries were appallingly bad. Many years were to elapse before industries allied to textiles, such as printing, bleaching and dyeing, were included within the scope of factory legislation, and non-textile workers, such as those employed in the potteries and in the clothing trades, did not gain this measure of protection until 1867. Even before 1847 sporadic legislation had made occasional attempts to remedy particularly distressing circumstances in industry, as, for example, Lord Ashley's Mines Act, 1842, which forbade underground employment for women and for children under ten years of age—an evil dating back to the Middle Ages.²

The Poor Law System

In previous pages of this Introduction we considered the part which the Poor Law Commissioners played in originating the inquiries which led to the beginnings of the Public Health system. It is now necessary to discuss the activities of the Commissioners in regard to their primary function which was the relief of destitution. The Poor Law Amendment Act, 1834, laid down with some precision the powers and duties of the Commissioners. They were empowered to sit as a Board, were to have a seal and were to hold office for a

¹ "Never will I believe that what makes a population stronger, and healthier, and wiser, and better, can ultimately make it poorer." . . . "If ever we are forced to yield the foremost place among commercial nations, we shall yield it, not to a race of degenerate dwarfs, but to some people pre-eminently vigorous in body and mind."

² Coal Mines Regulation Act, 1842. An Act to prohibit the employment of women and girls in mines and collieries, to regulate the employment of boys, and to make other provisions relating to persons working therein.

limited period of time. They were authorised to make general rules for the administration of relief, but their powers of control were limited on the one hand by the existing laws, on the other hand by the express provision that they should not be enabled to interfere in any individual case for the purpose of ordering relief.¹ They were, of course, empowered to appoint a staff, including Assistant Commissioners, Secretaries and other officers. Poor Law Commissioners continued to exercise administrative functions from 1834 to 1847, and in the latter year they were replaced by a Poor Law Board which continued in existence until 1871. In 1871, as a result of the passing of the Local Government Board Act of that year, the powers and duties of the Poor Law Board were transferred to the newly-formed Local Government Board.

The principal function of the officers employed by the Boards of Guardians created by the Poor Law Amendment Act, 1834, was to administer relief which might be, according to the circumstances of the individual case, "indoor relief" or "outdoor relief". Indoor relief meant full maintenance in an institution, while outdoor relief consisted of the grant of an allowance which might, or might not, be sufficient for adequate food, clothing and shelter.

During the decade following the passing of the Poor Law Amendment Act the industrial situation was a highly difficult one and even agriculture was depressed. When the Poor Law Board took over administration in 1847, industrial conditions were even more unsatisfactory and pauperism and vagrancy had much increased. Sickness of every kind was rife and there was everywhere, and especially in the rapidly growing towns, an urgent need for the provision of medical treatment facilities to supplement those supplied from voluntary sources. The number of voluntary hospitals and dispensaries was comparatively small, except in London and a few of the larger towns, and this was one of the problems which faced the Boards of Guardians appointed under the Act of 1834. But the Poor Law Amendment Act had not envisaged any system of medical relief and this was due in great measure to the reliance placed on voluntary association. The Report of the Poor Law Commission (1909) expresses the view that the system of medical relief in force at that time was almost entirely based upon the orders of the Central Authority and not upon the express provision of an Act of Parliament. Until much later in the century the term "medical relief" meant outdoor relief and such treatment as was given in the workhouses was in regard to the illness of inmates

¹ Report of the Royal Commission on the Poor Laws and Relief of Distress, 1909, p. 86.

already in these institutions, it being exceptional for a sick person from outside to be admitted.

One of the most urgent social needs of the period after the passing of the Poor Law Amendment Act, was the provision of more workhouse accommodation and a large building programme was put in hand. These buildings were later in the century used extensively for indoor medical relief but this did not happen until experience had revealed needs which voluntary sources could not supply. These developments will be described later.

Hospitals

In the Middle Ages treatment of the sick was extensively undertaken by the monasteries and it was one of the evils of their dissolution by Henry VIII that this source of aid to the indigent poor was abolished and nothing instituted to take its place. Apart from the lazar houses, which dealt only with leprosy or what was diagnosed as leprosy, the monasteries were the only sources of treatment available generally throughout the country for the ailments of the poor. The first hospital established in this country which is still in being as an organisation today was St. Bartholomew's Hospital, founded originally by Rahere in 1123. At the end of the sixteenth century there were five royal or chartered hospitals, namely, St. Bartholomew's, St. Thomas's, Bethlem, the Bridewell and Christ's. Between 1719 and 1747 eleven hospitals were founded in London and these included the Westminster (1720), Guy's (1724), St. George's (1733), the London (1740), and the Middlesex (1745). During the period between 1710 and 1797 twenty-seven hospitals were founded in the provinces. Of these the first was the Bristol Royal Infirmary, established in 1735, and, following it, the County Hospital in Winchester, founded in 1736. Addenbrooke's Hospital in Cambridge was not built until 1766, although Dr. John Addenbrooke's bequest for that purpose had become available in 1719. The above were general hospitals and, except for maternity hospitals, special hospitals did not develop until the early part of the nineteenth century. One of the first of the special hospitals was the Royal Chest Hospital founded in London in 1814. Later in the century general hospitals for children were opened—the Liverpool Infirmary for Children in 1851, the Hospital for Sick Children, Great Ormond Street, London, 1852, the Jenny Lind Hospital for Children at Norwich in 1854, and the Birmingham Children's Hospital in 1862.

During the first half of the century, there was a deficiency of hospital beds throughout the country, and in some urban areas,

owing to the lack of voluntary effort, this was especially noticeable. Treatment, both medical and surgical was, however, on such an unsatisfactory basis that this position was not as disadvantageous from the Public Health point of view as it might seem. Ignorant doctors and untrained nurses made the early nineteenth-century hospital, with its sepsis and its dirt, a highly dangerous place for a patient with a serious illness, and it was not until much later that the advent of anaesthetics and the general adoption of the methods of antiseptic and aseptic surgery transformed hospitals into the abodes of healing which they are today.

PART I

EARLY EXPERIMENTS IN SANITARY LEGISLATION AND ORGANISATION, 1848-71

The two landmarks which fix the boundaries of this part are the establishment of the General Board of Health in 1848, and the founding of the Local Government Board in 1871. During the twenty-three years which elapsed between these two important events much happened in the sphere of Public Health. This period was characterised by the fact that the original impetus imparted to the movement by the sanitary reformers continued unchecked and, indeed, before 1871 there were evident signs of its acceleration. Nevertheless, in spite of the fact that at the seat of government and amongst local authorities there was sufficient enthusiasm for the sanitary idea, the fledgling Public Health Service encountered much political opposition during its earlier years. The three chapters which constitute this part of the book contain a fairly full account of the difficulties encountered by the General Board of Health in Parliament and the part which Chadwick played in creating or exacerbating opposition to the Board's policies. An estimate is given of the sanitary progress achieved by the Board and the story is told of its fall from office and its supersession by that important organ of government the Privy Council.

During the period of the central administration of the Public Health Service by the Privy Council important advances were made, as the famous annual reports of its Medical Officer bear witness. A full account of Simon's reports is given in chapter 3, and emphasis is laid upon their importance as containing some of the fundamental principles upon which the practice of Preventive Medicine was founded.

Apart from the political side, the period between 1848 and 1871 was noteworthy in the field of Public Health for advances in the knowledge of the aetiology of cholera and the prevention of smallpox and in the economic sphere for a rapid increase in the industrialisation of the country. Some account is given of the early organisation of the medical profession and short biographies of three pioneers in the sister profession of nursing are included.

Sufficient has been said in this short introduction, it is hoped, to justify the title chosen for this part. The period was one of experimentation, indeed of trial and error, in regard to sanitary legislation and to the organisation of the developing and expanding

Public Health Service. Progress in sewerage the towns and in bringing adequate water supplies from afar to them had gone some distance by the year 1871, but there was still a great deal to be done. Nevertheless the General Board of Health and the Privy Council had gone some way to perfect the administrative machinery of Public Health both at the centre and at the periphery ; and the task of the Local Government Board, when it assumed office in 1871, was to continue where its predecessors had left off.



THE METROPOLITAN HEALTH OF TOWNS ASSOCIATION, 1844

Mr. Slaney, M.P.	Mr. Bouverie	Mr. C. Cochrane	Lord Ebrington, M.P.
Dr. Southwood Smith	Dr. Guy	Lord Ashley, M.P.	The Marquis of Normanby
			Mr. Baines, M.P.
			Mr. Cardwell, M.P.

CHAPTER 1

THE BEGINNINGS OF PUBLIC HEALTH LEGISLATION

In the Introduction reference is made to the two reports of the Royal Commission on the Health of Towns presented to Parliament in June, 1844 and February, 1845. The immediate result of these reports was the introduction of Lord Lincoln's Sewerage, Drainage, etc., of Towns Bill, but as it was late in the session and as, moreover, the Bill was receiving heavy criticism from the Health of Towns Associations and in other quarters, it was decided not to proceed with it during that session. (p. 20.)

As the Health of Towns Associations, backed as they were by the most notable of sponsors, had marked influence upon the course of sanitary legislation and administration during the period from 1844 to 1849, it may be desirable to say something about their origins and work. In those days, as to a much less extent today, a voluntary movement of this kind had to be backed by men of social influence even if the design had been conceived by those possessing more knowledge but less prestige. The Health of Towns Association in London was a child of the brain of Southwood Smith, born of the reformer's intense zeal for sanitary reform. Its sponsors and supporters were, however, men of the highest standing in the political and social world of the day. They included the Duke of Cambridge, the Duke of Norfolk, the Marquis of Normanby, Earl Grey, Earl Fortescue, the Earl of Ellesmere, the Earl of Granville, the Earl of Derby, Viscount Morpeth (p. 45), Lord Ashley (later the Earl of Shaftesbury), Sir E. Bulwer Lytton, Mr. B. D'Israeli,¹ M.P. and Mr. Henry Labouchere, M.P. Two of the medical supporters were the famous Sir James Clark and Mr. John Simon.

The Metropolitan Health of Towns Association was founded at a public meeting which took place at Exeter Hall on December 11th, 1844, under the presidency of the Marquis of Normanby. The chief object of the new Association was stated to be : "To diffuse among the people the valuable information elicited by recent inquiries, and the advancement of science, as to the physical and moral evils that result from the present defective sewerage, drainage, supply of water, air, and light, and construction of dwelling-houses."²

¹ Later on in his political career the spelling of the name was changed to Disraeli.

² From a report of the Health of Towns Association, 1847.

By the year 1847 Health of Towns Associations had been established in many populous places including Edinburgh, Liverpool, Manchester, York, Halifax, Derby, Bath, Marlborough, Walsall, Plymouth, Worcester and Rugby.

As mentioned above, Lord Lincoln's Sewerage, Drainage, etc., of Towns Bill received criticism from the Health of Towns Associations and this contributed to its failure. The reasoned comments on the Bill, which were incorporated in a closely-printed pamphlet of 122 pages¹, were drafted by Southwood Smith with some assistance from Chadwick, and they point out in great detail defects and omissions which would have rendered this measure, had it passed into law, of little effect. The Committee of the Health of Towns Association which considered Southwood Smith's criticisms of Lord Lincoln's Bill were, however, of the opinion that if the defects to which attention was drawn were rectified the ensuing Act would "form one of the most comprehensive, efficient, and beneficent statutes ever enacted by any legislature in any age or country."²

Although Lord Lincoln's Bill was, in the Parliamentary sense, unsuccessful at the time it was introduced it established a starting point in the history of sanitary legislation. Through its agency the sanitary needs of the country, from the administrative point of view, had at last been incorporated in a comprehensive Bill the detailed defects of which, as the Health of Towns Association's Committee had shown, were easily capable of remedy.

The publication of the Report on the Sanitary Condition of the Labouring Population of Great Britain in 1842, and the two reports of the Royal Commission in 1844 and 1845, had produced reactions not only in Parliament but in some of the larger towns where the sanitary evils of the times were most strongly felt. Some of the more progressive local authorities had acquired the habit of introducing private Bills for the better government of their areas ; and it was felt in Parliamentary circles that it was undesirable that these measures, dealing with similar subjects but affecting many parts of the country, should be drafted in a number of different ways. Parliament had, therefore, approved of Acts containing Model Clauses suitable for optional incorporation in private Bills. These Acts covered a diversity of subjects including markets and fairs, gas works, water works and police. An interesting example

¹ Report of the Committee to the members of the Health of Towns Association on Lord Lincoln's Sewerage, Drainage, etc., of Towns Bill, 1846.

² *Ibid.*, p. 122. For further details about the work of Southwood Smith see *Dr. Southwood Smith—A Retrospect*, by his granddaughter, Mrs. C. L. Lewes.

of this type of Act was the Towns Improvement Clauses Act, 1847, which set forth the provisions usually contained in local Acts for paving, draining, cleansing, lighting and improving towns.

Prior, however, to the passing into law of the Towns Improvement Clauses Act, one of the larger municipal corporations, namely, Liverpool, where the sanitary conditions were exceptionally bad, had succeeded in passing through Parliament the Liverpool Sanitary Act, 1846. This Act deserves detailed mention because it was the first comprehensive sanitary Act passed in this country. Reference has already been made to the number of different authorities in any area which had control of drainage, paving and street cleansing and similar matters and it had become evident that no sanitary progress was possible until this multiplicity of authorities had been drastically simplified. Profiting, no doubt, by the reports of the Royal Commission, the Liverpool Corporation, when drafting their Bill, seized the opportunity of disbanding such bodies as the Commissioners of Sewers and incorporated into the Bill clauses which would have the effect of making the Town Council the highways authority, solely responsible for drainage, paving and cleansing.

This Act, however, did not merely clothe the Town Council with the power to effect sanitary improvements ; it created the machinery through the agency of which these improvements could be carried out by giving power to the authority to appoint a Medical Officer of Health, Borough Engineer and Inspector of Nuisances. Section 122 of the Act relating to the Medical Officer of Health is as follows :—

And whereas the health of the population, especially of the poorer classes, is frequently injured by the prevalence of epidemical and other disorders, and the virulence and extent of such disorders, is frequently due and owing to the existence of local causes which are capable of removal but which have hitherto frequently escaped detection from the want of some experienced person to examine into and report upon them, it is expedient that power should be given to appoint a duly qualified medical practitioner for that purpose ; Be it therefore enacted, that it shall be lawful for the said Council to appoint, subject to the approval of one of her Majesty's principal Secretaries of State, a legally qualified medical practitioner, of skill and experience, to inspect and report periodically on the sanitary condition of the said borough, to ascertain the existence of diseases, more especially epidemics increasing

the rates of mortality, and to point out the existence of any nuisances or other local causes which are likely to originate and maintain such diseases and injuriously affect the health of the inhabitants of the said borough, and to take cognisance of the fact of the existence of any contagious disease, and to point out the most efficacious modes for checking or preventing the spread of such diseases, and also to point out the most efficient means for the ventilation of churches, chapels, schools, registered lodging-houses, and other public edifices within the said borough, and to perform any other duties of a like nature which may be required of him ; and such person shall be called the “ Medical Officer of Health for the Borough of Liverpool ” ; and it shall be lawful for the said Council to pay such officer such salary as shall be approved of by one of her Majesty’s principal Secretaries of State.

The duties of the Medical Officer of Health are set out in this Section and they are drafted as widely as possible. Under a later Section the duties of the Inspector of Nuisances are defined, and it is clear that he was to be an officer of the Council independent of the Medical Officer of Health but compelled by the nature of his functions to co-operate closely with him. The Section relating to the appointment of the Inspector of Nuisances is as follows :—

And be it enacted, that it shall be lawful for the said Council, and they are hereby required to nominate and appoint one or more persons to superintend and enforce the due execution of all duties to be performed by the scavengers appointed under this Act, and to report to the said Council and Health Committee all breaches of the bye-laws, rules and regulations of the said Council and Health Committee and to point out the existence of any nuisances, and such person shall be called “ The Inspector of Nuisances ”, and the said Council and Health Committee shall require such Inspector to provide and keep a book, in which shall be entered all complaints made by any inhabitant of the said borough of any infringement of the provisions of this Act, or of the bye-laws, rules and regulations made by the said Council for the preservation of due order as may be required by the said Council and Health Committee : and such Inspector shall forthwith inquire into the truth or otherwise of such complaints, and report upon the same to the said Health Committee at their next meeting, and such report, and the order of the said Health Committee thereon

shall be entered in the said book, which shall be kept at the office of the said Town Clerk, and shall be open at all reasonable times to the inspection of any inhabitant within the said borough ; and it shall be the duty of such Inspector, subject to the direction of the said Council and Health Committee, to make complaints before any Justice, and take legal proceedings for the punishment of any person or persons for any offence under this Act, or under any bye-laws made by virtue thereof.

It is by no means certain as to the origin of the title " medical officer of health." The first specific proposal that " a district medical officer " should be appointed locally, by the Crown or the local authority, was made in the General Report on the Sanitary Conditions of the Labouring Population of Great Britain by Chadwick in 1842, in these words:

" That for the general promotion of the means necessary to prevent disease it would be good economy to appoint a district medical officer independent of private practice, and with the securities of special qualifications and responsibilities to initiate sanitary measures, and reclaim the execution of the law."

In the Liverpool Sanitary Act, 1846, the term " medical officer of health," which occurs so frequently in the legislation of the next hundred years, appears for the first time in an Act of Parliament.

The Liverpool Sanitary Act received the Royal Assent late in 1846 and Dr. William Henry Duncan's appointment by the Town Council as Medical Officer of Health of the borough was confirmed by the Secretary of State on January 1st, 1847. Duncan (1805-63) was a native of Liverpool and he graduated M.D. at Edinburgh University in 1829 presenting a thesis entitled *De ventris in reliquum corpus potestate*. He was 41 years of age when he was appointed Medical Officer of Health of Liverpool and up to that time he had possessed an extensive general and consulting practice, being an honorary physician to the Liverpool Royal Infirmary and to the South Dispensary. He had treated many cases of cholera in the 1832 epidemic and as a result of his experience at the South Dispensary he had acquired extensive contacts with the poorer quarters in Liverpool and possessed strong sympathies with the casual labourers and their families who lived under hopelessly insanitary conditions in the courts and cellars of the dockside areas. Duncan knew Chadwick, Southwood Smith, William Farr and the other sanitary reformers very well and copies of some of the letters written by him to them on sanitary matters are still available.

His rise to fame as a sanitary reformer in Liverpool dates from the year 1843 when he gave two lectures to the locally influential Literary and Philosophical Society, taking as his subject *On the Physical Causes of the High Rate of Mortality in Liverpool*. These lectures were afterwards published in pamphlet form. As printed, the lectures are practically identical with the summary of Duncan's evidence to the Commissioners for Inquiry into the State of Large Towns and Populous Districts as contained in their report. This pamphlet achieved much local fame and it is of some general importance, as it seems to have been one of the factors which influenced the Town Council to take measures to promote the Liverpool Sanitary Act, 1846.¹ As Duncan's views on the transmission of infectious diseases and on the influence of sanitary conditions on mortality were similar to those of the medical profession of the time, it may be well to give a few quotations from the pamphlet. "It has long been known" Duncan says, "that where a number of individuals are gathered together within a narrow compass, as in towns, the mortality among them considerably exceeds that occurring among an equal amount of population scattered over an extended surface, as in country districts." He then goes on to explain the causes of the difference between the mortalities of town and country districts in terms of the "miasmatic" theory of the transmission of communicable disease. "The one great cause which in its operation seems to absorb all others is the vitiation of the atmosphere of towns to effect which a number of agencies are constantly at work. By the mere action of the lungs of the inhabitants of Liverpool, for instance, a stratum of air sufficient to cover the entire surface of the town to the depth of three feet is daily rendered unfit for the purpose of respiration."² Apart from this primary cause of ill-health, as Duncan regarded it, in closely-packed communities there was, in addition, a proportionately large amount of vegetable and animal refuse produced and this, in the process of decay, gives off gases which are injurious to human health. From this standpoint he goes on to argue that this contamination of the atmosphere, when people are closely crowded together, is contagious and can affect the system with typhus and other fevers and that this infection can spread with rapidity from person to person, from house to house and from street to street.

This is a reasonably clear statement of a not very precise or well-defined theory. The modern doctor, trained in the science of

¹ Frazer, W. M., *Duncan of Liverpool*, p. 23.

² *Ibid.*, p. 24.

bacteriology from an early stage, finds it hard to repress his impatience when reading of the vague ideas of our ancestors in regard to the causes underlying the transmission of infectious disease. And yet these same ancestors were just as intelligent as ourselves. The miasmatic theory was held almost universally during the first half of the nineteenth century and even later, as affording an explanation of all the known facts in regard to infectious disease. It was the official doctrine, upheld by Simon and Southwood Smith and supported by the General Board of Health and the Privy Council. The theory that some vague, intangible condition of the atmosphere was the causative factor in the production of infectious disease was so wide that it would cover all the phenomena associated with epidemics, and yet so imprecise that it was difficult to disprove except by the production of an alternative theory which could be scientifically demonstrated.

The surprising thing about all the controversies centred round the transmission of infection was that there was an alternative and more cogent theory already available. That was the theory of the specific contagia. During his official life Simon never wholeheartedly accepted the idea of the contagia and displayed some reluctance to embrace the views of Snow and Budd on the application of this theory to the mode of transmission of cholera. With the wisdom which comes after the event Simon, during the later years of his retirement, criticised the idea of the "epidemic atmosphere" as being open to the reproach of scientific one-sidedness, in spite of the fact that he was himself at one time a supporter of this doctrine. The alternative theory that infectious diseases were transmitted by contagious material derived from the bodies of patients and transferred to other persons either by direct contact, by fomites, or through the air was put forward by Fracastorius in his great work *De Contagione* which was published as early as 1546. The suggested method of infection was by "seminaria," which were living organisms capable of multiplying. Van Leeuwenhoek (1632-1723), the Dutch microscopist, with his elementary instruments, actually saw and described organisms which we would now classify as bacteria and protozoa, and he communicated his results to the Royal Society.

There was, in fact, a large amount of evidence already available in the literature in favour of what was later in the century called the "germ theory".

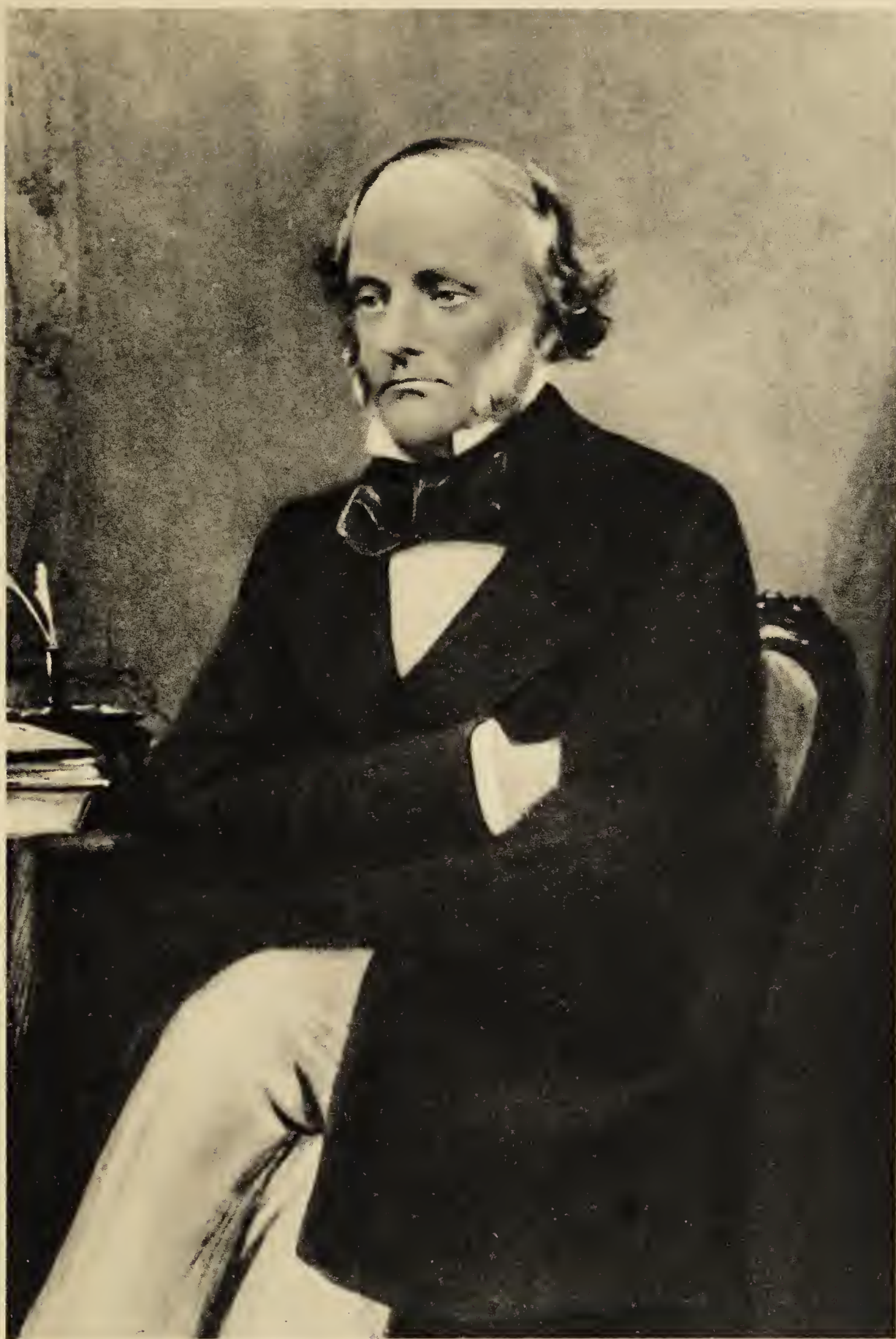
But this theory did present serious difficulties to the minds of epidemiologists during the greater part of the nineteenth century. The particular hindrance to its acceptance in the days when it was a

theory and not, as it later became in the hands of the bacteriologists, a scientific fact was that it failed to explain the rise and fall of epidemics. Sydenham, following Hippocrates, had postulated the existence of an "epidemic constitution" in years when the incidence of infectious diseases was high.

Simon and his colleagues thought that even if the theory of contagion were true it gave only a partial explanation of the facts, and that the presence of some additional factor must be presumed. Newsholme refers to it as "x", but the prevalent opinion amongst the epidemiologists in the middle of the nineteenth century—even those disposed to accept the idea of the specific contagia—was that the additional factor consisted of some condition of the atmosphere or possibly, as argued by Pettenkofer, came into operation when the level of the ground water was high. Even before the time of Pasteur, however, more and more importance began to be attached to infection and less to such other factors as climate, rainfall or atmospheric conditions.

It is nevertheless unlikely that the deficiencies in the scientific knowledge of those who advised the General Board of Health and the Privy Council during the early days of the sanitary movement materially retarded progress. Indeed, the remarkable fact about the work of the sanitary reformers in the first half of last century is that, basing their proposals on a structure of erroneous theories about the transmission of communicable diseases, they nevertheless hit upon the right solution to their problem. The solution at this particular time was sanitation and it was through sanitary measures that the Public Health Service, during the succeeding decades of the nineteenth century, was able to reduce general mortality rates and to combat, with some success, epidemic diseases.

It was fortunate for Liverpool that Duncan was able to take up his new appointment in January, 1847, because a little later in that year there occurred the worst epidemic which that borough had experienced in the course of its long history. This mixed outbreak of typhus, relapsing fever and dysentery was not indigenous to Liverpool but arose as the result of happenings some distance away. The Irish Potato Famine has evoked much sympathy for the peasants in that island who, in the absence of any alternative food supply, were confronted in the years 1846 and 1847 with the grim choice of starvation or emigration; but less attention has been paid to the effects of the invasion of this country through the port of Liverpool of scores of thousands of panic-stricken and starving refugees who brought not only their poverty but also their diseases with them.



WILLIAM HENRY DUNCAN (1805–1863)

Duncan in his annual report for the year 1847 referred to the alarm created in Liverpool owing to the fact that Irish paupers, driven from their miserable cabins by fear of starvation, were landing in the port in large numbers. "The 1st of January, 1847," he reports, "found this pauper immigration steadily increasing, and it continued in such rapidly progressive rates that by the end of June not less than 300,000 Irish had landed in Liverpool.¹ Of these it was very moderately estimated that from 60,000 to 80,000 had located themselves amongst us, occupying every nook and cranny of the already overcrowded lodging-houses, and forcing their way into the cellars (about 3,000 in number) which had been closed under the provisions of the Health Act, 1842." There were, in this situation, all the elements necessary for an epidemic of terrifying dimensions and it was not long in coming. Later in the year 1847 there were at one time between 4,000 and 5,000 cases of "fever" under the care of the dispensary and parish doctors besides many more in the Poor Law infirmaries and in extemporised hospitals.

At that time it was not possible to distinguish clinically between typhus, typhoid, relapsing fever and a number of other febrile conditions. All were grouped under the heading of "Fever" in the returns. The mixture of typhus and relapsing fever of which this epidemic was mainly composed was referred to at that time as the "Irish Famine Fever". There were, in addition, many cases of dysentery which were included under the heading "Diarrhœa". Altogether in the parish of Liverpool, which had at that time a population of less than 250,000, there were in 1847 as many as 5,845 persons who died from "Fever" and 2,589 from "Diarrhœa". In one of the poorer parts of the Borough—the Vauxhall Ward—the death rate for 1847 amounted to 135 per 1,000, and in Lace Street one-third of the ordinary population of several hundred persons died during that year. Duncan estimates that in 1847 nearly 60,000 persons in the borough contracted fever and 40,000 diarrhœa and dysentery. It was the most fatal year in the history of Liverpool.

The example set by Liverpool in making the appointment of a Medical Officer of Health in 1847 was copied by the City of London in the following year and, during the next twenty-five years some of the larger towns in this country appointed health officers, generally under the provisions of the Public Health Act, 1848. Thus, Leeds appointed its first Medical Officer of Health in 1866, Manchester in

¹ Baines in his *History of Liverpool* says that between January 16th and April 17th, 1847, no less than 127,785 passed through the port.

1868, Birmingham in 1872, and Newcastle in 1873. The City of London was fortunate in securing the services of John Simon as Medical Officer of Health in 1848.

Sir John Simon, K.C.B., F.R.C.S., F.R.S. (1816–1904), possessor of the greatest name in the history of Public Health, received his medical training at St. Thomas's Hospital with which, later, he was associated as a member of the staff until he retired from the service of the Crown in 1876. Simon probably had some small share of Huguenot blood in his veins, and it is doubtless for that reason that he pronounced his name with a long "o" in the final syllable.

As mentioned in the paragraph above, the City of London, following the example of Liverpool, appointed under a local Act of Parliament¹ a Medical Officer of Health in 1848. The person chosen for this appointment was Simon, and he continued in that office until 1855 when he became Medical Officer of the General Board of Health. Simon's annual reports covering the seven years of his occupancy of the City appointment are available, and they show the progress of his interest in Public Health and the development of his characteristic literary talent. His City of London reports, as those of other Medical Officers of Health, deal with such utilitarian subjects as house drainage, water supplies, unfit houses, offensive trades and other matters of a similar kind; but even at this early stage of his career Simon shows evidences of that sympathy with the needs of the very poor which was to become a feature not only of his writings, but of the whole of his later official work in the service of the Crown. Thus, in his City of London reports, he displays especial concern over the social condition of the working classes—their poverty, the unfitness of the houses in which they were compelled to live, and their general helplessness and misery.

Even in these earlier writings he shows the breadth of his administrative vision in, for example, his plea for the establishment of a Ministry of Health. The City of London was fortunate to be able to retain Simon's services for as long a period as seven years; but it was inevitable that when Parliamentary sanction was given in 1855 to the appointment of a Medical Officer to the General Board of Health he should be the first and only choice. Thus, in the space of a year, the General Board of Health lost the services of Chadwick and Southwood Smith and, in its reconstructed form, gained those of Simon.

¹ The City Sewers Act, 1848. The section in this Act, giving power to appoint a Medical Officer of Health, is expressed in the same terms as section 122 of the Liverpool Sanitary Act, 1846, under which Dr. Duncan was appointed.

Simon's period of service with the General Board of Health lasted only for the short period of three years, as that body, after a stormy and eventful life, was dissolved in 1858. His most interesting writings while at the General Board of Health were a report, addressed to the President of the Board, on the cholera epidemics of 1848-9 and 1853-4 in London, and a long account, also addressed to the President, on the History and Practice of Vaccination.¹ As an example of Simon's fairness it may be mentioned that, in the first-named report, he gives full credit to Dr. Snow for his prior researches into the ætiology of cholera.

The transfer of Public Health to the central direction of the Privy Council in 1858 involved a change of masters for the Medical Officer. It was in the calm and non-political atmosphere of the Privy Council that Simon performed what is regarded as his best work. His fourteen reports to the Privy Council, covering the period from 1858 to 1871,² traverse the whole field of the sanitary and social circumstances of the people of England at a time when, at long last, the central and local authorities were making strenuous attempts to transform the state of the rapidly-growing towns of this country. But Simon's reports are no mere accounts of sanitary improvements. They lay down the abiding principles of Public Health administration, point the way to further much-needed reforms and, year after year, make urgent demands for the more intensive prosecution of medical research. In the last requirement he showed himself a true son of St. Thomas's. Dear to his heart was the reform of the methods of entry to the medical profession, and the establishment of a register which should in the course of time guarantee minimum standards of qualification in the case of all practitioners.

Unfortunately, some of the recommendations made by Simon in his special memorandum of 1858 on the Medical Bill, then being drafted for presentation to Parliament, were not accepted, and the ensuing Act contained imperfections which were not removed until 1886.

Simon was concerned in the deliberations of the Royal Commission of 1869-71 which reported upon the central and local sanitary organisation of England and Wales; and he and the Medical Department of the Privy Council were transferred to the newly-established Local Government Board in 1871. He retired from

¹ These two classic documents are referred to in chapter 2 of this part.

² Simon's report for 1871 was addressed to both the Privy Council and the newly-formed Local Government Board. The latter body took over the control of the Medical Department on August 14th, 1871.

the service of the Crown, in which he had spent twenty-one years of his official life, in 1876, at the age of sixty. He received a K.C.B. in 1887.

Apart from his official writings which have become well known through the public-spirited action of the Sanitary Institute of Great Britain in publishing the main part of them in two large volumes in 1887, Sir John Simon is the author of a little-known book of *Personal Recollections* and of the famous *English Sanitary Institutions*. About one-third of the latter book deals with the earlier history of sanitation, mainly under the Romans, but the remainder, dating from the accession of Queen Victoria, contains an account of the rise of Preventive Medicine in England and describes its successful application to the problems of a rapidly growing urban economy. Much of the detailed history of the General Board of Health during the ten years of its life is given, followed by an account of the work of the Medical Department under the Privy Council from 1858 to 1871 and of the early years of Public Health under the Local Government Board. Simon, in his capacity as Medical Officer in turn to the General Board of Health, the Privy Council and the Local Government Board, had unexampled facilities for observing and directing the gradual perfecting of the administrative machinery which was to supervise the developing Public Health Service. Some of his administrative work, and especially the Public Health Act, 1875, for the drafting of which he had a large share of responsibility, lived long after him. His encouragement of medical research over a period of many years established the tradition that this branch of activity was essential for the proper functioning of the central department responsible for the supervision of the Public Health Service, and thus paved the way for the founding of the Medical Research Committee and the Medical Research Council.

Sir John Simon is the great exemplar of the English Public Health Service. Many generations of medical men in the public service have read his writings and have founded their professional careers upon the principles which he taught. Like Shaftesbury, he cared for the poorer people of this country and throughout his life did his best to help them.

In the Introduction and in the first part of this chapter an account of the fate which temporarily befell the Government's Health Bill in the session of 1846 was given. During the session of 1847 a Bill,

based upon the recommendations of the Royal Commission and differing in some respects from Lord Lincoln's Bill, was introduced in the House of Commons by Viscount Morpeth.¹ Unfortunately this Bill, as drafted, proposed to make a large use of the Clauses Consolidation Acts and these, designed expressly to facilitate private legislation by local authorities and other bodies, were not entirely suitable for the purpose of general legislation. Moreover, renewed opposition arose against the introduction of legislation in regard to Public Health, partly from those who regarded it as interference with the liberty of the subject and partly from individuals who considered that their pecuniary interests might conceivably be affected. This opposition proved too powerful during 1847 and, at the instance of the Prime Minister, the Bill was withdrawn on July 8th. There followed a strenuous educational campaign organised by the Metropolitan and some of the other Health of Towns Associations.² In this campaign Dr. T. Southwood Smith was especially active. His pamphlet entitled *An Address to the Working Classes of the United Kingdom on their Duty in the Present State of the Sanitary Question* aroused great interest throughout the country and was one of the factors which influenced the Government to re-introduce Lord Morpeth's Bill. The Bill was re-drafted and introduced by Lord Morpeth on February 10th, 1848, and again encountered opposition. Lord Morpeth, who was Commissioner of Woods and Forests in Lord John Russell's Government, fully realized the effect which a Bill of this kind, interfering with the rights of property, would have upon the minds of the strongly individualistic members of the House of Commons, and his attitude towards the opponents of the measure was a judicious mixture of firmness and conciliation. In this way he succeeded in piloting the Bill through the Lower House and it successfully reached the House of Lords before the end of June.³

Opposition to the Bill was not ended when it appeared in the House of Lords, but agreement between the two Houses was finally obtained by the usual methods of political compromise, and on the

¹ Health of Towns Bill.

² The campaign during the period between 1833 and 1848 for the passing of Public Health legislation has been referred to by B. L. Hutchins as the "Public Health Agitation." Chadwick, associated with the Poor Law Commission in an official capacity, did not take any active part in the campaign of 1847-48.

³ Lord Morpeth became the seventh Earl of Carlisle in October, 1848, taking his seat in the House of Lords in February, 1849. He had, however, been able to pilot the Bill through the Commons in the early part of 1848.

last day of August it received the Royal Assent. This Act is of great importance not only because of its intrinsic value but also because it is the first of a long line of Public Health Acts. As a general Act, applying to all parts of England and Wales except the Metropolis, it had the effect, in the years which followed, of gradually establishing on an unassailable foundation the Public Health Service. It led to the creation in all the local areas of a body of skilled administrators—medical officers of health, engineers, surveyors, inspectors of nuisances—who were, before the end of the century, to bring about a sanitary revolution.

Nevertheless, the Public Health Act, in its application to local conditions, was handicapped in its working by the compromises which alone had enabled the Government to secure its passage through Parliament. It was normally a permissive Act and, unless the circumstances were exceptional, did not come into force without adoption in each area. One of the exceptional circumstances was held to be present when the average death rate, over a period of seven years, exceeded 23 per 1,000. The Act could also be compulsorily brought into operation by the Central Department in any City, Town, Borough or Place, after enquiry by the Superintending Inspector, upon a petition of not less than one-tenth of the inhabitants rated to the relief of the poor. In this case the procedure was either by way of an Order in Council, or of a Provisional Order confirmed by Parliament.

One of the principal difficulties faced by local authorities in their early attempts to improve the environmental conditions of their areas was that there was no central department to which they could refer for advice and help. The Public Health Act overcame this difficulty by creating as a new central department the General Board of Health. In places where the Act was in operation it became the duty of the local sanitary authorities to take action before a court of summary jurisdiction in respect of "nuisances"¹ occurring in their areas. In times of exceptional danger from formidable epidemic disease the Privy Council was enabled to bring into operation the special provisions of the Nuisances Removal and Diseases Prevention Act giving the General Board of Health powers of direction to local authorities.²

¹ This word, derived from the Common Law, has been of great value to Public Health.

² The Nuisances Removal and Diseases Prevention Act of 1846 was of a temporary character only. A further Nuisances Removal and Diseases Prevention Act was passed shortly after the Public Health Act and in the same session of Parliament. This Act was to be permanent and the two Acts passed in 1848 had the effect of reinforcing each other. As mentioned in the

As the Public Health Act, 1848, governed the development of the Public Health Service during its formative years it may be well to pay some attention to its detailed provisions. As the basis of administration at the periphery, Local Boards of Health were to be formed. These, in districts where there was one borough, were to be the Town Councils. Power was given in sec. 37 for each Board of Health to appoint a Surveyor, Inspector of Nuisances, Treasurer and Clerk and separately, in sec. 40, an Officer of Health, who must be a legally qualified medical practitioner. The appointment, or removal, of an Officer of Health was to be subject to the approval of the General Board of Health. Contained in the Act were numerous sanitary clauses. All sewers, for example, were to be vested in the Local Board of Health whose duty it was to keep them in such a manner that they would not be a nuisance or injurious to health, and to see that they were cleared, cleansed and emptied. It became unlawful to erect any house without drains (sec. 49) or without a sufficient water-closet or privy and ashpit (sec. 51). The obligation was placed upon all Boards of Health to provide that all streets within their district, including pavements, should be properly swept, cleansed and watered; and these Boards might, if they thought fit, provide sanitary conveniences for the public.

Ownership of streets was vested in the local Boards of Health and it became the responsibility of these Boards to arrange that all streets, except private streets, should be levelled, paved, flagged and repaired. Slaughterhouses and common lodging houses were to be registered and offensive trades regulated. Cellars were not to be used as separate habitations unless at least seven feet high, of which three feet of the height must be above the surface of the street or ground adjoining. There were provisions for the whitewashing, cleansing and purifying of houses in a filthy or unwholesome condition.

Public reaction to the sanitary sections of the new Act—which were similar to those contained in the Liverpool Sanitary Act, 1846—was favourable and their application, aided by improvements in the mechanical appliances used in sanitation, effected a gradual but permanent betterment in the health of the people. But the administrative parts of the Act, responsible for much of the opposition encountered in its passage through Parliament, continued to be criticised. One admitted defect in the machinery for central direction laid down in the Act was that the constitution of the General Board of Health did not conform to the accepted canons of text above, the Nuisances Removal and Diseases Prevention Act, 1848, provided the Central Authority with certain compulsory powers in relation to local authorities. Such powers could be brought into operation only in certain circumstances, such as a threatened epidemic.

English government, which required a Minister directly and personally responsible to Parliament for the actions of his department. On the contrary, the General Board of Health was controlled by a nominated President who was not necessarily a Minister of the Crown, and, consequently, might not be able to defend his department in the very place where criticism was most likely to arise. Another circumstance, much to the disadvantage of the Board, was that the Act gave it discretion to bring its provisions into operation in places with a high death rate, and this power of interference with local government, however justifiable it was at times to exercise it, aroused enmity in many parts of the country. An additional defect of the Act was that it provided no powers for the Board to appoint *permanent* inspectors to make enquiries in connection with the numerous sewage and water-supply schemes which were then being undertaken. Under the Metropolitan Interments Act, 1850, Dr. Southwood Smith was appointed an additional member to deal with the difficult administrative problem of interments in London.¹ The fact that a permanent member of the Board who was a medical practitioner was appointed under this particular Act was regarded at the time as a joke—perhaps in doubtful taste. An interesting comment on this subject was made by a member of the medical profession, Dr. Rumsey, in the preface to his *Essays on State Medicine*, some years later. “Who would have thought,” he says “that in the last decade of advancing civilization and in a nation boasting of its intellectual and material resources, of its administrative energy and efficiency, the whimsical experiment should have actually been tried of appointing three non-medical authorities—two Lords and a Barrister, to preserve the health of the living; and then, after a year or so of doubtful success, calling in a Physician to bury the dead.”²

¹ The new member of the General Board of Health appointed under the Metropolitan Interments Act, 1850, was, as mentioned in the text above, Dr. T. Southwood Smith. He had, however, acted as a member of the Board, without pay, since 1848, having been appointed under the Nuisances Removal and Diseases Prevention Act of that year.

The Nuisances Removal and Diseases Prevention Act, 1848, gave power to appoint a *medical* member to the Board. Under the Metropolitan Interments Act, 1850, the power given was to appoint an *additional* member who did not need to be a medical practitioner.

² Dr. Henry W. Rumsey, of whom comparatively little is known, had, as a result of his experiences of medical practice, decided ideas on the subject of the part the State should play in connection with the provision of medical services for the poor. He criticised the report of the Poor Law Commission because it paid too little attention to medical relief; and he maintained that the true conception of the functions of the District Medical Officers under the Guardians should be to become the sanitary advisers of the poor in their dwellings.

The Public Health Act, 1848, was to continue in operation for five years and, as already noted, it did not extend to London, which, with its complicated problems and its multiplicity of authorities for every conceivable purpose, required special consideration. Accordingly a Royal Commission was appointed at the end of the Parliamentary session of 1847 and its reports, three in number, were published one at the end of 1847 and the other two during the year 1848. These reports were disappointing as far as their recommendations were concerned and it was evident that the problems of the Public Health of the Metropolis could not, at that stage, be solved by the passage of a single Act of Parliament. It was necessary to proceed piecemeal. The only legislative result of this Royal Commission, therefore, was the passage of an Act providing for the appointment of Metropolitan Commissioners of Sewers; and at the same time, although the City of London was outside the terms of reference of the Commission, the City Sewers Act, with similar purposes, received the Royal Assent.

Shortly after the successful passing of the Public Health Act, 1848, the various Health of Towns Associations ceased to function. After 1849 we hear nothing further of them. The work immediately before them successfully accomplished, they quickly faded into oblivion.¹ In the light of future events this failure to continue the life of these valuable educational associations seems unfortunate. There was still much work for such bodies to do and, later on, they were revived in a slightly different form in some places, e.g., the Manchester and Salford Sanitary Association, founded in 1852.

¹ A very full and well-documented account of this movement is contained in an article by Dr. Robert G. Paterson, "The Health of Towns Association in Great Britain, 1844-1849," in the *Bulletin of the History of Medicine* (U.S.A.), Vol. XXII, No. 4, July-August, 1948.

CHAPTER 2

THE PERIOD OF THE GENERAL BOARD OF HEALTH, 1848-58

Before proceeding to describe improvements in the sanitary conditions in the urban areas following the appointment of the General Board of Health in 1848, it may be well to consider the changes in the social and economic circumstances of this country which took place during the first half of the century. At the outset it should be observed that, during this period, the rate of increase in regard to both population and industrial output was greater than at any other time previously in our history; and, as a result, stresses and strains, seldom experienced in the predominantly rural England of the earlier ages, began to show themselves. Much of the increase referred to was associated with the unexampled rise in population of a number of towns in the Midlands and the North, some of which had multiplied in size several times over as the factories, with their incessant demands for labour, were built and again and again extended. This rapid accumulation of population herded on limited areas of land was something of which mankind had had, up to that period, little experience and no solutions to the urgent problems thus created readily presented themselves.

The building of houses suitable for occupation by the poorly-paid working classes grievously lagged behind requirements; there was no supervision or control of building; and as a consequence there arose in their thousands the types of insanitary dwellings which were the cause of a large share of the high death rate experienced throughout the greater part of the century.

During this period the working classes could be divided, for the purpose of comparison of wages, into three main divisions: the agricultural labourer, the unskilled labourer in the town and the skilled artisan. The agricultural labourer was paid the lowest cash wages but he also received in many cases some food, and he was usually able to supplement his earnings by the cultivation of a patch of land adjoining his house. Unfortunately, the agricultural labourer's wages fluctuated in accordance with the prosperity of the industry and there were great variations in the rates paid in different parts of the country. All through the century the agricultural worker's earnings were higher in the industrial North, owing to the proximity of mines and factories, than in the South. Thus, for example, agricultural wages in the West Riding of

Yorkshire had been 14s. a week when they were 7s. in Wiltshire and Suffolk.

The unskilled labourer in the town was often of the “navvy” type and his services were much in demand, largely owing to the building of docks and railways. When the particular job on which he was engaged was finished he drifted into the nearest town to swell the ranks of the unemployed and to increase the congestion in the already overcrowded lodging houses. The money value of his wages was considerably more than that of the agricultural labourer, but it is doubtful if his *real* wages were any higher; and his employment was, on the whole, more subject to fluctuations than was that of the field worker. Of all manual workers the skilled artisan was in by far the most favourable position. Except during periods of unemployment his standard of wages, far higher than that of any kind of labourer, placed him and his family well above the “poverty line”. According to Professor Bowley’s tentative table, the wages paid in each of the three groups of manual workers at various periods were as follows¹:—

	1824	1833	1867	1897
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
London type of artisan ..	30.0	28.0	36.0	40.0
Provincial artisan ..	24.0	22.0	27.0	34.0
Town labourer	16.0	14.0	20.0	25.0
Agricultural labourer ..	9.6	10.6	14.0	16.0

Taking the trend of wages as a whole during the period under consideration, and, indeed, during the century, it seems certain that the reward which the manual worker received for his labour, judged by its purchasing power, steadily increased and this occurred in spite of the rapid rise of population. A table prepared by Bowley showing the purchasing power of the weekly wages of an agricultural labourer in Sussex in terms of the amount of wheat which could be bought at the prices prevailing at various periods, exhibits this tendency very clearly. In 1795, with wages at 10s. 6d., he could purchase 4.5 pecks of wheat; in 1821, wages 9s., 5 pecks; in 1827, wages 10s., 5.4; in 1836, wages 10s., 6.6; and in 1851, wages 10s. 6d., 9.0. Towards the end of the century the standard of weekly wages (12s.) in relation to the price of corn was so high that an agricultural labourer in this country was able to purchase 12.7 pecks of wheat or, of course, the equivalent in other foodstuffs.

As has been said in the Introduction, the health of a nation depends upon many factors. Amongst these factors a very high

¹ Bowley, A. L., *Wages in the Nineteenth Century*, p. 70.

place must be given to the "standard of living", because it determines to a considerable extent the nutrition, clothing and housing of the worker and his family. A gradual increase during the nineteenth century in the material prosperity of the workers who form the greater part of the population of the country, by itself, and apart from sanitary improvements, reduced mortality and morbidity rates and produced a higher standard of health in the community.

Near the beginning of the period we are now considering there occurred, in 1851, the decennial Census, and the returns gave not only the populations in the various districts but also the age distribution and the distribution by occupation of the people of this country. The population (England and Wales) had increased from the 8,892,000 given in the Census return for 1801 to 17,927,000 in 1851. Population was, in fact, increasing to a much greater extent than was believed at the time; but this increase, contrary to Malthus's emphasis on the birth rate, was occasioned by a steady fall in the death rate which, though still very high, had become much less than it was during the later part of the eighteenth century. In spite of highly unfavourable sanitary and housing conditions there were factors which operated in the direction of a reduction of the death rate. Of these factors, perhaps the most considerable was the reduction of the incidence of smallpox by vaccination—the most important, up to that time, of the successes of Preventive Medicine—but scurvy had virtually disappeared, except among seafarers, and some credit for the improved survival rate must be given to the medical profession which with all its shortcomings, had become more skilled in the art of healing than before. Food supplies were assured to a growing population by the repeal of the Corn Laws in 1846, an event which not only represented a victory of the manufacturing interests over the landowner and agriculturist, but was a necessary condition for the continuing expansion of industry. The choice as to whether England was to be a great power, dependent upon imported food, or a small power, like Denmark, with a self-contained agricultural economy, was made at that time. It is hard to say whether this decision was right or wrong; the choice then made, although all its implications for the future were not foreseen, was inevitable. No nation, even one composed of Solomons, would have foregone the present certainty of almost unlimited wealth because of doubts about the remote future. Adam Smith once remarked that defence was of much more importance than opulence¹; but the situation of Great Britain in the nineteenth century was that opulence was necessary to defence.

¹ *Wealth of Nations*, Book IV, chap. 2.

How was the enlarging population distributed in relation to industry? The 1851 Census returns give the answer to this question in a fairly satisfactory form. From the point of view of numbers engaged the most important occupation was still, after the Industrial Revolution had been running its course for three-quarters of a century, agriculture and farming activities. The number of males employed in agriculture was 1,563,000 and females 227,000. After agriculture the occupation employing the largest numbers was that of domestic service, with 134,000 males and 905,000 females. Domestic service employed, in fact, about six per cent. of the whole population over the age of ten. Of the manufacturing industries cotton held a predominating lead, employing 255,000 males and 272,000 females. A rapid expansion of population, such as was occurring at that time, made great demands on the building industry for the provision of houses, and it is not, therefore, surprising that the numbers employed in the various branches of this trade—carpenters, bricklayers, masons, plasterers, etc.—were very high, amounting to a total of 463,000 males and 1,000 females. Labourers numbered 367,000 males and 9,000 females, and wool workers 171,000 males and 113,000 females. Shoe-making, surprisingly enough, employed more workers than mining, there being 243,000 males and 31,000 females in the one trade and 216,000 males and 3,000 females in the other. Seamen numbered 144,000. Iron workers numbered 79,000 males and 590 females, the railways employed 65,000 males and 54 females, and hosiery 35,000 males and 30,000 females.¹ (Further information in regard to the numbers employed in certain industries at various periods will be given in subsequent chapters of this book.)

Apart from those employed in agriculture and domestic service the cotton industry made by far the largest claims on the manpower of the country and it was by its cotton exports that Britain's foreign trade was largely built up. Cotton, at the time of this Census, was far ahead of the woollen industry. Shoe-making, in which only a small amount of machinery was then used, had become an important source of employment. Although the numbers employed in some of these industries did not largely exceed those in 1831—and this applies especially to the cotton industry—the output was often enormously greater owing to the increased efficiency of machinery. The ever-increasing efficiency of machinery and its developing use are the predominant facts of the nineteenth-century expansion of industry.

¹ Clapham, Vol. II, p. 24, emphasises the uncertainty always associated with an occupational census.

Localisation of industry had, by 1851, already become strongly marked and the health problems of each area tended to possess the same features. The most important of these areas predominantly devoted to particular industries were:—cotton in South Lancashire, worsteds in the West Riding, shoe-making in Northamptonshire, and iron and steel in the North-East. Such concentrations of industry, often established by the efforts of one man or a group of men, tended strongly to retain a local hold as skills and techniques became diffused in these areas.

At this time the science and art of metallurgy had received an impetus through the work of Bessemer and Siemens, the iron age was passing out and the age of steel beginning. Steel was of endless use in industry—for machinery, railway tracks, cutlery and, not least, for ships. But the use of iron and steel for machinery required accurate methods of measurement and these Whitworth, with his gauges and his standards, supplied.

The first half of the nineteenth century, as a period of great change in the technique of industry, became also a period when the minds of thinking men began to exercise themselves about the problems of rent, interest, profit, foreign exchanges, and taxation, which arose when this country became the greatest exporting nation in the world. National wealth rapidly increased, but there was no method known by which the large income of the community could be shared amongst owners of land, manufacturers, distributors and workers except that of competition. In the main, political economists like John Stuart Mill and Ricardo—the successors of the Physiocrats in France and Adam Smith in this country—advocated the doctrine of *laissez faire*, under which the State refrained from interfering with industry, allowing the forces of competition amongst various groups in the community, organised and unorganised, to determine the proportions of the total income of the country which each should receive. No State could, of course, afford to push the doctrine of *laissez faire* to its logical conclusion and, in this country, the Government were already interfering with industry to a small extent in various ways, as for example, by taxation and by the operation of the Factory Acts. Most of the economists during the first half of last century assumed, however, that governmental interference with industry would be of a minor character and that profits would be determined and wages fixed by the free play of competition. This, indeed, was largely what happened; and it was on the basis of this quite justifiable assumption that the economists founded the twin conceptions of the Economic Man and the Iron Law of Wages. Unswayed by emotion and immune

from all feelings of sentiment or pity the Economic Man pursued the even tenor of his way blindly seeking his material advantage as though impelled not by reason but by a law of Nature. To the early nineteenth-century economists the Economic Man was not an individual but an average and the laws which they enunciated were derived by a process of rigid analysis from not inexact postulates. The Iron Law of Wages, founded on Malthus's *Essay on Population*,¹ was based on the assumption that population would always, in the long run, encroach upon the means of subsistence, and that accordingly wages could never permanently rise above this level.

There is little doubt that the teaching of the orthodox economists influenced the various governments in whose hands the destinies of this country rested during the greater part of the nineteenth century, just as Adam Smith's *Wealth of Nations*, published in 1776, influenced those of an earlier generation. But Adam Smith was addressing an age which lived under an agricultural economy, whereas his successors in the nineteenth century were working out their principles in the midst of an ever-changing industrial economy. When it is mentioned that the economists influenced the Government and therefore the course of legislation, it is not meant to imply that this influence—judging from the standpoint of a century later—was necessarily beneficial to the community as a whole. Their theories

¹ *Thomas Robert Malthus* (1766–1834). His chief claim to fame is derived from his authorship of the well-known *Essay on the Principle of Population*, first published in 1798. The principle was that mankind's reproductive powers must, in the long run, encroach upon the means of subsistence, and that the checks to an increase of population are preventive, namely, moral restraint and vice, and positive under which heading are included unwholesome occupations, extreme poverty, bad nursing of children, large towns, excesses of all kinds and the whole train of common diseases and epidemics, wars, plagues and famine. Many of the positive checks on population, it will be noted, were on full operation during the greater part of the nineteenth century, but they did not suffice to restrain the increase in population, but Malthus, of course, could not envisage the advent of a phenomenon unknown since the days of the Roman Empire—a population, living largely on imported food.

David Ricardo (1772–1823) as an economist was in the line of descent from Adam Smith. The public discussion of the Corn Laws led Ricardo to analyse the nature of rent and he published articles on the price of corn and its free importation. His chief work, *Principles of Political Economy and Taxation*, was published in 1816. Ricardo's economic teaching owed much to Malthus.

John Stuart Mill (1806–1873) was the son of James Mill, who is regarded as the founder of philosophical radicalism. John Stuart Mill's education was obtained from his father who, it is said, commenced to teach him Greek at the age of three. The mental discipline instilled by his father influenced J. S. Mill, not entirely favourably, throughout the whole of his life. His main books are : *Representative Government*, *Political Economy* (published in 1848), *System of Logic*, *on Liberty*, *Utilitarianism*, and an *Autobiography*. John Stuart Mill's influence upon contemporary thought can hardly be over-estimated, both as a philosopher and an economist.

about competition and the freedom of contract—even contracts between such unequal parties as employers and largely unorganised workpeople—led them to view with suspicion the immature beginnings of social legislation, and in the campaigns for the extension of the various Factory Acts passed during the first half of the century they were usually to be found in the camp of the opposition. But the leaders of economic thinking like Malthus, John Stuart Mill and Ricardo typified in their doctrines something of the ruthless, competitive spirit of an age in which this country, the first to be fully industrialised, laid the foundations of its wealth and prosperity.

The Public Health Act, 1848, was passed at a time when this country was rapidly gaining wealth and influence largely at the expense of the lives and health of the industrial population. Herded into the insanitary areas of the rapidly growing manufacturing towns and suffering the ravages of smallpox, typhus and cholera, the working classes of England experienced to the full the disadvantages of the Industrial Revolution. In most of the large towns the death rate was over 30 per thousand, and more than 150 per thousand of all infants born died in the first year of life. However, the birth rate was high and the population of the towns, in spite of the large number of deaths, each year showed a steady, and often large, increase. Except in time of severe epidemics the population of Liverpool, for example, was increasing, during the middle period of last century, by as many as 10,000 each year. As the reports of the Poor Law Commissioners showed, the sanitary circumstances of all the large towns, including London, were appalling. Water supplies were universally insufficient and often grossly contaminated, hardly any of the towns were properly drained, streets were unpaved and filthy and arrangements for communal cleanliness were of the most primitive kind. It was to deal with these circumstances that the Act of 1848 was passed and public recognition of the need for drastic action, in the main ensured that this important piece of legislation was energetically administered.

The members of the General Board of Health were, in the first place, Lord Morpeth, who had piloted the Public Health Bill through the House of Commons and who became Earl of Carlisle later in 1848, Lord Ashley, and Mr. Edwin Chadwick, who was the salaried member. Almost immediately [October 5th] Dr. T. Southwood Smith was appointed by Royal Warrant the medical member of the Board under sec. 11 of the Nuisances Removal and Diseases

Prevention Act, 1848.¹ In 1850 Southwood Smith vacated his office as medical member of the General Board of Health to become the additional paid member, responsible for interments, under the Metropolitan Interments Act of that year. The first Secretary to the Board was Mr. Henry Austin, C.E.

Lord Ashley, who became Earl of Shaftesbury in 1851, was chairman of the Board from 1848 to 1854 and he retired from the Board at the same time as Chadwick and for the same reason. (p. 60.)

The General Board of Health was, under the Act, responsible as the sanctioning authority for schemes and expenditure by local authorities and boards of health, and under the Nuisances Removal and Diseases Prevention Act it possessed powers which could be brought into operation whenever a formidable epidemic of infectious disease was threatened. Moreover, the Board had some general powers to institute inquiries and investigations into the sanitary circumstances of particular areas, and its officers advised and encouraged such local Medical Officers of Health as were then appointed. Sir George Newman thinks that one of the most practical results of the Board was the introduction of the Medical Officer of Health,² and it seems certain that the work of many of the distinguished medical men who were appointed to that office during this period was singularly successful in stimulating, in their areas, sanitary progress.

Information as to the detailed work of the General Board of Health is contained in a document entitled Report of the General Board of Health on the Administration of the Public Health Act and the Nuisances Removal and Diseases Prevention Act, from 1848 to 1854; and this report forms the basis of Simon's account of this period in *English Sanitary Institutions*. Much of the Board's work was routine, dealing with sewerage schemes, the framing of by-laws to regulate the conduct of business by local boards and the duties of local officers, the cleansing of streets and towns and the management of slaughter houses and lodging houses. One of the features of the Board's administration was the issue of Instructional Minutes (equivalent to the modern Circular) to explain and supplement proposed by-laws, and to inculcate special doctrines as to house

¹ There is evidence for this statement in the *Annual Register*, 1848, in the *Dictionary of National Biography* (Southwood Smith) and in Mrs. C. L. Lewes's life of Southwood Smith. In this appointment Southwood Smith was unpaid, no doubt at his own wish, and he continued to do his professional work. He gave up professional practice in 1850 on his appointment as paid member under the Metropolitan Interments Act. Notice of this appointment appeared in the *London Gazette* of August 14th, 1850.

² Newman, Sir George, *The Building of a Nation's Health*, p. 15.

drainage and the drainage of towns, lands and roads and the agricultural application of town refuse. One useful legislative project of the Board was to procure the passing of two Acts of Parliament, both in 1851, the first of which provided for the registration and superintendence of common lodging houses, and the second for the establishment by local authorities of lodging houses for the labouring classes.

From time to time the General Board of Health published reports on disputed or doubtful questions of medical or sanitary interest, and one of the most important of these during its earlier years was its Report on Quarantine, issued in 1849. The system of quarantining ships and passengers was based upon current medical ideas in regard to the infectivity of persons suffering from such diseases as cholera, yellow fever and typhus; and this procedure, if strictly applied, inflicted great hardships on individuals and entailed great expense to ship-owners, whose influence was exerted against it. Summing up the arguments for and against quarantine the Board leaned heavily against the system, on the grounds that epidemic diseases were not contagious but have their "primary and essential condition" in an "epidemic atmosphere" which "may exist over thousands of square miles and yet affect only particular [unwholesomely kept] localities." Relying upon this [as we know now] entirely erroneous theory the Board proposed to abolish the quarantine system and to trust to the protection to be derived from local sanitary arrangements. It is a little surprising to the successors in this generation of the sanitarians of the past to observe their dislike of the theory of contagion and their almost religious faith in the wholly unsupported [and unlikely] doctrine of the existence of an "epidemic atmosphere". The author has had the good fortune to secure copies of the letters written by the Medical Officer of Health of a large town about this time, and one refers to the experience of an emigrant ship which put into port, having cases of cholera on board, in August, 1852. In the ship were 100 passengers, nearly all steerage. The voyage lasted for 27 days and during that time fourteen of the passengers and crew became ill with cholera and, of these, thirteen died. The passengers ascribed this outbreak to the crowded state of the steerage; the ship's doctor and the captain to the fact that many of the steerage passengers slept on deck; while the Medical Officer of Health thought it probable that the ship had passed through a *stratum of atmosphere charged with the cholera poison*.

A useful contribution to Public Health in London was the Board's investigation into the water supply of the Metropolis which it

criticises on the grounds that the water was so hard as to be ineligible for domestic use, generally contained an excess of organic matter, and much of it was polluted by sewage. The Board blamed the system whereby the Metropolis was dependent upon a number of trading companies, insisted that the water supply ought not to be regarded as administratively separable from its drainage, and recommended new sources of supply, new methods of distribution, and new principles of administration.

There is little doubt that the General Board of Health, from the outset, tackled the difficult problems with which it was confronted with great energy and determination and that the advice which it gave to the country on sanitary measures was of the utmost value. The Report of the work of the Board from 1848 to 1854 bears abundant testimony to the zeal as well as the intelligence of its members and officers. Nevertheless, the Board became steadily more and more unpopular. It was doing first-class work and it was, at the same time, offending both individuals and organised bodies, including the local authorities and the professional associations. Possibly, some of this antagonism was inevitable. Sweeping changes, such as those that were taking place in the sanitary arrangements of the country during this period, can never be handled without giving offence to those whose interests are adversely affected. Undoubtedly the Board possessed a pronounced bias towards centralisation and this produced wide antagonisms in a people whose political tendencies were so strongly in favour of local government. Much of this centralising tendency was due to the influence of Chadwick, whose experience in connection with the Poor Law Commission and, indeed, his bent of mind, strongly influenced him to concentrate power in the hands of the central administration and to override the authorities at the periphery. Chadwick's policy would have produced rapid results if it had been allowed to operate, but the unfortunate fact was that as time went on it encountered more and more opposition.

The proposals of the General Board of Health for a drastic re-organisation of the Metropolitan water supply system failed to obtain the consent of the Home Secretary, Sir George Grey, and the Bill introduced by the Government in 1851 was referred to a select committee and, re-drafted, was passed in 1852. It was of little value and a long period of time elapsed before the water supplies of the London area became satisfactory. By this time the Board was being subjected to heavy attacks on the grounds of its dictatorial attitude, and its interference with the freedom of local government. Much of the force of these attacks was aimed at Mr.

Chadwick who was regarded as possessing a predominant influence over the General Board of Health; and when criticism in many quarters was becoming really serious the time was approaching when its period of office, fixed by the Public Health Act at five years, was to terminate. These attacks on the administration of the General Board of Health came to a head in a debate in the House of Commons on July 31st, 1854, when the Government was defeated on a motion to continue the Public Health Act in operation. In the voting Palmerston's motion was defeated by 74 votes to 65, Disraeli and John Bright being against. Most of the daily newspapers united in criticising the Board. Even *The Times*, which had expressed its support to the passing of the Public Health Act, 1848, now led the chorus of condemnation. "Aesculapius and Chiron," it said, after the change in the structure of the Board, "in the form of Mr. Chadwick and Dr. Southwood Smith have been deposed, and we prefer to take our chance of cholera and the rest than be bullied into health." Chadwick's policy at the General Board of Health had few defenders, but the Prime Minister, Lord John Russell, paid a glowing tribute to Lord Shaftesbury: "There was no man living who had done so much to promote the welfare of the working classes, or done it so disinterestedly and so unostentatiously."¹ In the same session an Act was passed continuing the Public Health Act on the basis of annual renewal, and appointing a new Board of Health consisting of certain Chief Ministers of State and a paid President who was, in fact, to constitute the Board. Chadwick disappeared as an administrator, and at 54 the main part of his life's work was over. Southwood Smith, then 66 years of

¹ Hammond, J. L. and B.B., *Lord Shaftesbury*, p. 167.

Antony Ashley Cooper, Seventh Earl of Shaftesbury (1801-85), the great reformer, held the courtesy title of Lord Ashley from 1811 to 1851, when he succeeded to the earldom. His relations with his father were never satisfactory and his rather unhappy childhood influenced his attitude to life during the whole of his career. Educated at Harrow and at Christ Church, Oxford. Became, successively, Member of Parliament for Woodstock, Dorchester and Dorset. Early on in his career Ashley became interested in social reform, and instead of adopting the usual political attitude of a man of his age and station, he devoted his long life to the care of the worker. His principal life-work was concerned with factory legislation, but he was an active supporter of reform in the mines and in connection with the lunacy laws. He espoused the cause of the chimney sweeps, one of whom was immortalised in Charles Kingsley's *Water Babies*. Lord Shaftesbury was President of the General Board of Health from 1848-54.

See Edwin Hodder's *Life and Work of the Seventh Earl of Shaftesbury* (3 vols.) and J. L. and B. Hammond's *Lord Shaftesbury* for information about one of the greatest men, and certainly the greatest philanthropist, of the nineteenth century. For Sir John Simon's eulogy of Lord Shaftesbury see *English Sanitary Institutions*, p. 233.

age, shared the common misfortune. Shaftesbury, although he was deeply chagrined at this unfortunate outcome of his six years' work at the General Board of Health, came out of the affair without loss of credit.

The Newly-Constituted General Board of Health, 1854-8

The opposition which the old Board of Health had provoked throughout the country made it unlikely that the life of the new Board would be long and prosperous, but the circumstance that Sir Benjamin Hall was appointed its first President increased somewhat the chances that its reception would be a favourable one. He had opposed some of the policies of the first Board and he was out of sympathy with those who advocated, in the sphere of Public Health, an undue centralisation of executive authority. He placated the medical profession by appointing an Advisory Council which included Dr. Neil Arnott, Sir James Clark, Mr. John Simon and Mr. William Farr, and this body was of great assistance to him during the cholera epidemic of 1854. (See p. 63.) In his year of office Sir Benjamin Hall (afterwards Baron Llanover) introduced into the House of Commons a Bill which constituted the Metropolitan Board of Works; he succeeded in obtaining amendments to the Nuisances Removal and Diseases Prevention Acts of 1848 and 1849¹; and, when the Public Health Act came up for annual renewal, he proposed the appointment of a Medical Council and a salaried Medical Officer. The first holder of that office, the predecessor of the long line of distinguished medical men who have held the appointment of Medical Officer to the Local Government Board and, later, Chief Medical Officer of the Ministry of Health, was Mr. John Simon.

The life of the new General Board of Health terminated abruptly in 1858 and its medical duties were transferred by the Public Health Act of that year to the Privy Council, the Medical Officer being also transferred.

The Cholera Epidemics, 1848-9 and 1853-4

The three great pandemics of cholera of the years 1832-33, 1848-49 and 1853-54 originated in India where the disease had been epidemic since 1817. We are concerned here in the first place with that of 1848-49 which was part of the pandemic appearing first at the beginning of the hot season in Kabul in 1845. In that year the disease devastated whole regions of Afghanistan and the Punjab

¹ The Diseases Prevention Act, 1855 (18 & 19 Vict. cap. 116) and the Nuisances Removal Act for England, 1855 (18 & 19 Vict. cap. 121).

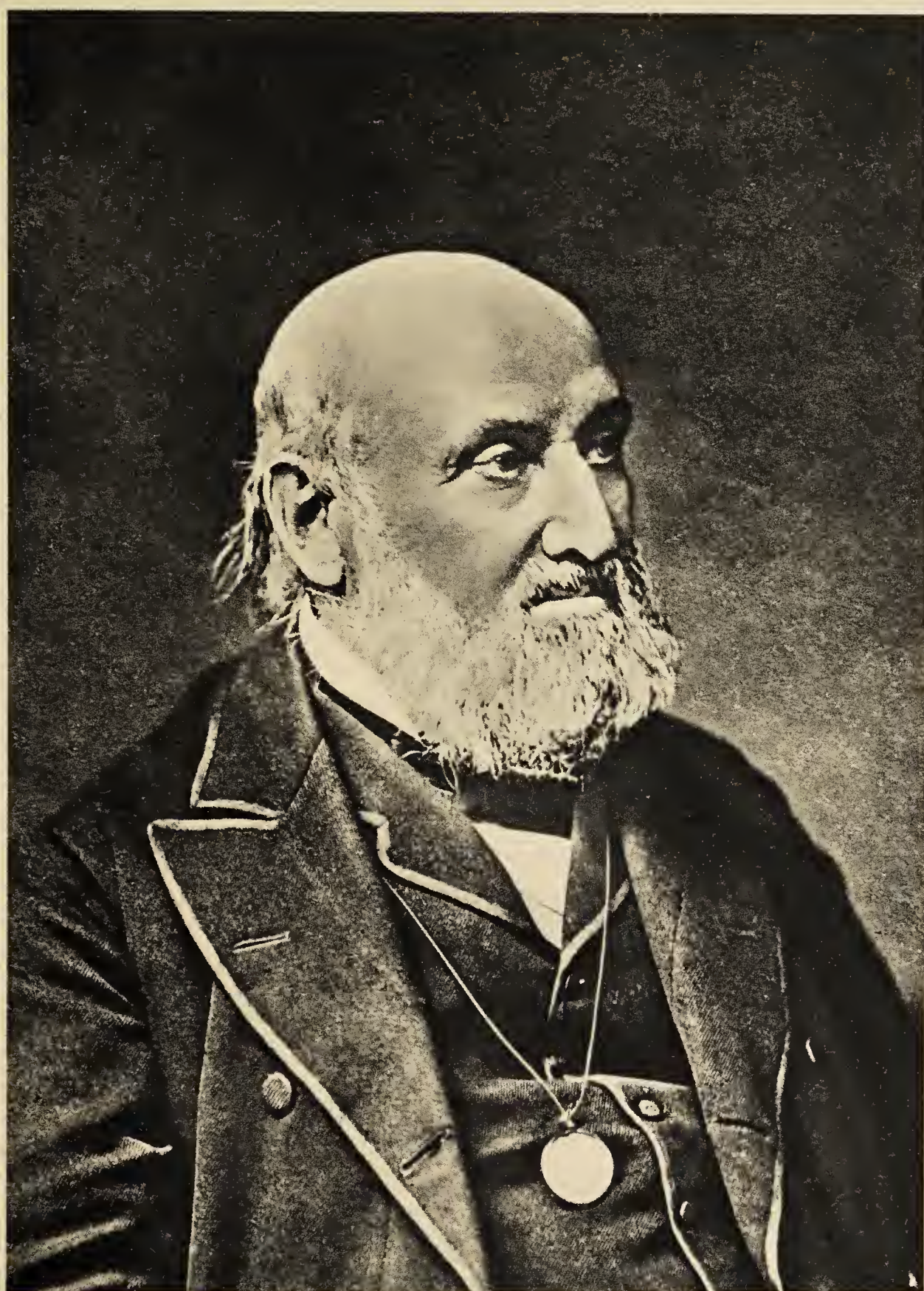
and appeared in many parts of Northern India. It continued to rage in the southern part of the Madras Presidency during the early part of 1846 and, later, advanced to Bombay, Poona and Hyderabad. In May of that year it appeared at Aden and soon after in Persia and Asiatic Turkey. Entering European Russia it appeared at Moscow on September 18th, 1847, and reached St. Petersburg (Leningrad) in June, 1848. It also appeared in Egypt, Finland and Poland, and in September, 1848, reached Hamburg and, crossing the sea, appeared in Edinburgh in October, spreading to Glasgow, Dumfries and the surrounding areas. Cases appeared in England late in 1848, but the main impact of the epidemic occurred in 1849 when cholera broke out in London, Liverpool, Manchester, Hull and the great majority of urban areas.¹ From the statistical report submitted by the Registrar-General to the Home Secretary it appears that the number of deaths in England and Wales in 1849 from cholera was 53,293 and from diarrhoea (presumably cholera) 18,887, making the total number of deaths in this epidemic 72,180. In London there were 30,000 cases with 14,601 deaths and in Liverpool, where the outbreak was exceptionally severe, 10,000 cases and 5,245 deaths.²

Dr. Farr's comment on this epidemic is characteristic: "If a Foreign army had landed on the coast of England, seized all the seaports, sent detachments over the surrounding districts, ravaged the population through summer, after harvest destroyed more than a thousand lives a day for several days in succession, and, in the year it held possession of the country, slain fifty-three thousand two hundred and ninety-three men, women and children—the task of registering the dead would be inexpressibly painful: and the pain is not greatly diminished by the circumstance that in the calamity to be described the minister of destruction was a pestilence that spread over the face of the island, and found in so many cities quick poisonous matters ready at hand to destroy the inhabitants."

The previous epidemic of cholera in England had occurred in 1831–32 and the threat of a similar outbreak in 1849 occasioned great alarm. The General Board of Health had been in operation

¹ Report of the General Board of Health on the Epidemic Cholera, 1848 and 1849 (Appendix B).

² The 1848–49 cholera epidemic was noteworthy, outside the sphere of Public Health, for the founding of the present Prudential Insurance Company. The idea of the provision of insurance benefits to wage-earners for a small weekly payment owes its inception to Rev. James Gillman who became Vicar of Holy Trinity Church, Lambeth, in 1847, and who gave heroic service in his parish during the epidemic. Gillman was the son of James Gillman, a surgeon practising in Highgate, who was a friend of Samuel Taylor Coleridge. In 1850 the Prudential was established by the Rev. James Gillman and Henry Harben, the former being the first Chairman.



WILLIAM FARR (1807-1883)

but a few weeks when signs of the steady advance of this formidable disease across Europe began to appear. In order to combat as effectively as possible what might prove to be a serious outbreak, the Board obtained an Order in Council bringing into force the emergency provisions of the Nuisances Removal and Diseases Prevention Act. The action the Board took in the epidemic was to require abatement of nuisances, the cleansing of streets and alleys, the whitewashing of houses and similar measures of a sanitary nature; and it urged upon local health authorities the desirability of providing, by arrangement with the Boards of Guardians, hospitals where the victims of the disease could be tended. In all areas threatened with cholera it was advised that the number of district medical officers, for home treatment purposes, should be augmented and that a special corps of medical visitors should be available. The purpose of the medical visitors was to ascertain at the earliest possible stage the existence of symptoms, it being the view of the Board and its medical advisers that the premonitory diarrhœa "before merging into confirmed cholera" was comparatively amenable to treatment.

No serious discussions about the mode of spread of this disease appear in the official reports available shortly after the 1848-49 epidemic; but after the 1853-54 epidemic, which was derived from the same sources, followed much the same course, but was less severe, there appeared a report by Simon, dated May, 1856, to the President of the General Board of Health having the illuminating title *On the London Cholera Epidemics of 1848-49 and 1853-54*, as affected by the consumption of impure water, and a work by Dr. John Snow entitled *On the Mode of Communication of Cholera*. The book by Snow is a classic description of epidemiological investigation and is well known to the medical profession of today; but Mr. Simon's report is less known and it may be well to refer to it first. Most of the facts upon which the report was based were collated by a Committee of the General Board of Health's Medical Council. (See p. 61.) This Committee which was called the Committee for Scientific Purposes, had as its members Drs. Arnott, Baly and Farr, Professor Owen and Mr. Simon, and, in considering the question of the causation of cholera and the mode of transmission, it had before it all the statistical information available from the 1848-49 and 1853-54 epidemics which had been compiled by Farr, and it was aware of Snow's views contained in a pamphlet first published in the summer of 1849. The investigations of the Committee were confined to a part of London situated on the south side of the river containing the registration districts of

St. Saviour's, St. Olave's, and St. George's, Southwark, and in Bermondsey, Newington, Lambeth, Wandsworth, Camberwell and Rotherhithe; and enquiries were directed for the specific purpose of deciding as to what extent, if any, certain types of water supplies were inculcated in the spread of cholera. Populations living in these areas were of the same social status, living under precisely similar conditions, and the only variable was the quality of the water supply which was obtained from two different companies. The Lambeth Company pumped from the higher part of the River Thames, the Southwark and Vauxhall Company from the lower. Simon says of these waters, "the former furnishing as good a water as any distributed in London, while the latter was purveying perhaps the filthiest stuff ever drunk by a civilized community." These companies competed in each district, their rival mains branching within the same area and often running parallel in the same streets. This was a situation perfectly adapted for a crucial test as to the conveyance of the infection by water and it remained to ascertain the number of cases of cholera in each area of supply. It is to be observed that the populations of the areas chosen for the survey were large, being 466,000 in 1849 and having increased to 511,000 by 1854. When the figures were analysed by Farr the results were startling. In the 24,854 houses supplied by the Lambeth Company, with a population of 166,906 persons, there were in the 1853-4 epidemic 611 cholera deaths, being at the rate of 37 to every 10,000 living; whereas in the 39,726 houses supplied by the Southwark and Vauxhall Company comprising a population of 268,171 persons, there occurred 3,476 deaths, being at the rate of 130 per 10,000 living. It thus appeared that deaths among the population using the contaminated water were $3\frac{1}{2}$ times as numerous as among those drinking the cleaner water. In a comparison of cholera mortalities in streets which were jointly supplied by the two companies the mortalities in the one case were three times as great as in the other. But there was an even more crucial test. The Lambeth Company which in 1854 was purveying a good type of water was, during the 1848-49 epidemic, supplying a worse water than even the Southwark and Vauxhall Company. As has already been mentioned the population supplied by the Lambeth Company lost in the 1853-54 epidemic 611 persons; but in the 1848-49 outbreak, when supplied with impure water by the same Company, the deaths were 1,925.

This statistical investigation, one of the most important of all the epidemiological investigations undertaken in this country, in conjunction with Snow's observations, conclusively proved that the *materies morbi* containing the cholera infection could be carried in

water. It did not show what the infecting agent was or in what part of the contaminated water it resided. The precise answer to that question had to wait until Koch, in 1883, isolated and cultivated the cholera vibrio. But, epidemiologically, a forward step of the greatest importance had been taken and the "miasmatic" theory of the origin of infectious disease had received a blow from which it never completely recovered.

The greater part of the credit for the actual suggestion of the way in which cholera is transmitted rests, however, with Dr. John Snow. Snow was born at York in 1813 and at the age of fourteen became an articled pupil to a surgeon in Newcastle-on-Tyne and studied medicine at the Newcastle Infirmary. In October, 1836, he arrived in London to continue his studies and began his hospital practice at the Westminster Hospital; and in 1838 he qualified in Medicine at the Apothecaries' Hall. During the succeeding years he read papers to the Westminster Medical Society, in 1843 he graduated M.B., of London University, and in the following year he received the M.D. When anæsthetics were introduced in 1846 Snow became interested in the subject and he perfected an ether inhaler. Thereafter much of his time was spent in giving anæsthetics and he was the first in London to use chloroform extensively in practice. In the year 1848 Snow's active mind turned to the investigation of the causes of cholera and in 1849 he published his views in a pamphlet entitled "On the Mode of Communication of Cholera," and continued his researches into this disease during the outbreak of 1854, being assisted by information from the Registrar-General. The second edition of the pamphlet, much enlarged, was presented to the public late in 1854. It contains Snow's further observations on the ætiology of cholera which led him to the conclusion that the specific cause of the disease was a micro-organism carried in the excretions contaminating water supplies. From his extensive enquiries he shows that cholera can be communicated from person to person, that it is propagated by the morbid poison entering the alimentary canal and that "the instances in which minute quantities of the ejections and dejections of cholera patients must be swallowed are sufficiently numerous to account for the spread of the disease."¹

"Persons in attendance on cholera patients who are members of the family cannot fail to have their hands infected and thus the poison enters their food and another case occurs." "Those who merely attend the funeral and have no connection with the body frequently contract the disease, in consequence, apparently, of partaking of food which has been prepared or handled by those having duties

¹ *Snow on Cholera*, Commonwealth Fund, New York, 1936.

about the cholera patient, or his linen and bedding." "Nothing has been found to favour the extension of cholera more than want of personal cleanliness. . . ."

"It is among the poor where a whole family live, sleep, cook eat and wash in a single room, that cholera has been found to spread when once introduced. . . ."

"When, on the other hand, cholera is introduced into the better kind of houses, as it often is, by means that will afterwards be pointed out, it hardly ever spreads from one member of the family to another. The constant use of the handbasin and towel, and the fact of the apartment for cooking and eating being distinct from the sick room, are the cause of this."¹

Snow goes on to observe that if cholera had no other means of communication than those we have been considering it would be constrained to confine itself chiefly to the crowded dwellings of the poor; "but," he says "there is often a way open for it to extend itself more widely, and to reach the well-to-do classes of the community: I allude to the mixture of the cholera evacuations with the water used for drinking and culinary purposes, either by permeating the ground and getting into wells, or by running along channels and sewers into the rivers from which entire towns are sometimes supplied with water."

Snow, in his book, includes a map which has marked off the sub-districts of Golden Square, St. James's and Berwick Street and on which are indicated the houses where, in that area, cases of cholera occurred, and he shows the situation of the Broad Street pump which supplied water to most of these dwellings. "The wide open street in which the pump is situated suffered most, and next the streets branching from it, and especially those parts of them which are nearest to Broad Street." A table giving the number of deaths during each day the Broad Street pump outbreak lasted shows the highly explosive nature of the infection. Prior to August 30th, 1854, there had occurred a single case each day for several days; on the 30th there were 8 cases, on the 31st 56, and on September 1st and 2nd 143 and 116 respectively. Thereafter the number of attacks on successive days declined to 54, 46, 36, 20, 28. On September 8th the handle of the pump was removed and, as a result, the daily number of cases dropped in the following days to 11, 5, 5, 1, 3, 0.

In the later part of his book Snow describes the crucial observations reported upon by Simon in regard to cholera cases in the areas of supply of the Lambeth Company and the Southwark and

¹ Snow, J., *On the Mode of Communication of Cholera*.

Vauxhall Company and sums up the results as follows : “ The experiment, too, was on the grandest scale. No fewer than three hundred thousand¹ people of both sexes, of every age and occupation, and of every rank and station, from gentlefolks down to the very poor, were divided into two groups without their choice and, in most cases, without their knowledge; one group being supplied with water containing the sewage of London, and, amongst it, whatever might have come from the cholera patients, the other group having water quite free from such impurity.”²

There is no doubt that the credit for discovering the method of spread of cholera largely rests with Dr. John Snow. Sir Benjamin Ward Richardson, M.D., F.R.C.P. (1828–1896) relates of him the following story :—“ On the evening of Thursday, September 7th, the vestrymen of St. James’s were sitting in solemn consultation on the causes of the visitation. . . . While, then, the vestrymen were in solemn deliberation, they were called to consider a new suggestion. A stranger had asked, in modest speech, for a brief hearing. Dr. Snow, the stranger in question, was admitted and in a few words explained his views of the ‘ head and front of the offending.’ He had fixed his attention on the Broad Street pump as the source and centre of the calamity. He advised the removal of the pump handle as the grand prescription. The vestry was incredulous but had the good sense to carry out the advice. The pump-handle was removed and the plague was stayed.”³

Richardson,⁴ who knew Snow well, says of his theories in regard to epidemic disorders that they are “ distinguished by specific symptoms, that they are due to a specific poison, which is propagated by certain fixed laws; which attains its progression and increase in

¹ This number is much less than the official figure given by Mr. Simon in his report.

² *Snow on Cholera*, p. 75.

³ Introduction to *Snow on Cholera*, p. xxxvi.

⁴ Richardson was a prolific writer on medico-historical subjects. In 1862 he published a volume entitled *Clinical Essays—Asclepiad*. The *Asclepiad* was a journal issued during the period from 1884 to 1895. In all, eleven numbers were published, and they contained Richardson’s observations and reflections on the past and the contemporary medical scenes. Mainly the treatment of his subject was biographical and, as Sir William Collins says in a pamphlet dated 1922, “ the range covered by these biographies, both in centuries and in subjects, was very extensive.” Jenner, Boerhaave, Van Leeuwenhoek, Sir Thomas Browne, Snow, William and John Hunter, Morgagni, Laënnec and many others are mentioned in these writings. There are copies of the 1884–95 *Asclepiads* in the libraries of the British Medical Association, the Royal College of Surgeons and the Royal Society of Medicine. (The author is indebted to Dr. Ian E. McCracken, of the London School of Hygiene and Tropical Medicine, for the foregoing facts.)

and through animal bodies; which is communicated from one animal body to another; and, which is the same in its essence from first to last.”

As had been said, Snow was by occupation an anæsthetist although by inclination he was undoubtedly a scientist. His reputation as an anæsthetist was so great that he was chosen to administer chloroform to Queen Victoria at the birth of Prince Leopold on April 7th, 1853, and again at the birth of Princess Beatrice on April 14th, 1857. But it is as the member of the medical profession who made the first great discovery of the mode of transmission of an infectious disease that Snow will always be remembered.

It is by no means unusual in the field of medical research for two men, working independently of each other, to arrive at a similar truth approached in different ways. No doubt, during the earlier cholera epidemics, many minds were attempting to solve the mystery of the appearance, disappearance and reappearance of this dreaded disease. One of Snow's contemporaries, William Budd (1811–80), of Bristol, who was a strong supporter of the theory of contagion, arrived at similar conclusions in regard to the dissemination of cholera and typhoid. His observations on the latter subject were published in the *Lancet* and the *British Medical Journal* over a period of more than thirty years, and these communications were reprinted in a volume entitled *Typhoid Fever, its Nature, Mode of Spreading and Prevention* in 1873.

In pursuance of his theories Budd,¹ in his practice at North Tawton and later (1842) at Bristol, disinfected the excreta of his typhoid patients, and in this way reduced considerably the familiar incidence of the disease. Newsholme (*Fifty Years in Public Health*) regards Budd as one of the great pioneers in preventive medicine. On the other hand Creighton, the second volume of whose *History of Epidemics in Britain* was published in 1894, had very little patience with Budd's theories of the contagiousness of typhoid and is openly contemptuous of Snow's essay *On the Mode of Communication of Cholera*, which he dismisses as “speculative”.

Early in his professional career Budd, like Farr, had worked under Louis at La Pitié Hospital in Paris, and by 1843 seems to have arrived independently at the conclusion that typhus and typhoid were distinct diseases. He had commenced in general practice in Bristol in 1842 and it was in that great city that he made the observations

¹ Budd began his studies of typhoid as an assistant to his father at North Tawton, Devonshire, but in 1842 he settled in Bristol. He was appointed physician to St. Peter's Hospital and in 1847 physician to the Bristol Royal Infirmary. (D.N.B.)

which convinced him that the cause of malignant cholera is a living organism of distinct species, disseminated in the drinking water of infected places, and breeding in the human intestine. It was, in short, a specific *contagium vivum*, endowed with the power to reproduce itself. These views, which, as he recognised, applied to typhoid as well as to cholera, were contained in Budd's pamphlet, *Malignant Cholera; Its Mode of Propagation and its Prevention*, published in 1849 at about the same time as Snow's first essay on the same subject, which arrived at precisely similar conclusions. Budd was not, like Snow, a society doctor in London with access to those in high places, and for many years his views on specific contagion, with particular reference to cholera and typhoid, remained almost unheeded, embedded in the files of the *Lancet* and the *British Medical Journal*.

Unfortunately for Budd's reputation, he did not possess a biographer of the calibre of Benjamin Ward Richardson who, in his *Asclepiad*, published in 1887, gave a full account of the work of Snow in regard to the dissemination of cholera. During the last twenty years, however, the value of Budd's researches both in regard to typhoid and cholera has obtained recognition largely owing to the writings of E. W. Goodall and Sir Arthur Newsholme.

It may be well at this stage, in order to complete consideration of the subject of the modes of transmission of communicable diseases, to note one after the other the various views held by epidemiologists on this question during the nineteenth century. These views, in the approximate order of their development were as follows :—

- (1) That a particular "miasmatic state" of the atmosphere could, by itself, produce an epidemic of some infectious disease.
- (2) That conditions of insanitation were able to produce locally an atmospheric state which itself was the causative agent of these diseases.
- (3) That the state of the atmosphere was not sufficient, alone, to bring about disease but that, in addition, there must be present contagia which, at various times and by different observers, were regarded as either specific or non-specific.
- (4) That infectious diseases were due, essentially, to specific contagia which, however, were unable to act except in the presence of some other condition, *e.g.*, the state of the atmosphere or the soil.
- (5) That the specific contagia, isolated and identified by the

bacteriologists as micro-organisms of various kinds, were, in appropriate circumstances, the sole infecting agents.

It is to be observed that several of these theories were current at any given time, almost up to the end of the century. The earlier miasmatic theory (1) in its pure form had been abandoned by practically all epidemiologists by the time the Privy Council took over the control of Public Health affairs. Theory No. (2) was strongly held by Southwood Smith and Chadwick during the period of the "Public Health Agitation" and afterwards when they were in power at the General Board of Health. The advantage of this theory was that it abundantly justified the campaign for sanitary improvement. Simon was at the stage of theory (2) in his early days at the General Board of Health; but his belief in atmospheric influence in propagating infection was badly shaken after the 1854-5 cholera epidemic under the combined assault of Snow's observations and Farr's statistics. We may therefore conclude that before the Medical Department was placed under the benign sway of the Privy Council in 1858 Simon's views had moved forward and he had been converted to theory (3). His new-found belief in the influence of the contagia was only partial, however, but there is some evidence that by the time of the cholera outbreak of 1866 he had accepted the view that the primary cause of epidemic disease was specific infection which required some additional agency to bring it into operation. It was probably for this reason that in 1866 he sent observers to Germany to investigate further Pettenkofer's theories about the levels of the ground water. Snow and Budd seemed to have had no doubts, and, with a prescience little short of amazing in that climate of opinion, to have become, *per saltum*, out and out contagionists, without passing through any of the intervening stages. Creighton, on the other hand, appears to have believed in the older theories up to as late as the 'nineties. (See pp. 378-81: Carriers.)

Smallpox and Vaccination

In the Introduction (pp. 6-7), some account was given of the investigations of Jenner into the protection afforded against smallpox by an attack of cow-pox, or by the inoculation into the skin of material obtained from the scabs of a person suffering from this comparatively minor disease. Jenner's discoveries were of inestimable importance to the human race, since they pointed the way to victory over an enemy which was causing countless deaths and incalculable suffering all over the world. Smallpox, in its severer forms, is fatal to a large proportion of the victims it attacks

and it is one of the most highly infectious of all known communicable diseases. Before the advent of vaccination, smallpox claimed its countless victims amongst all classes, from the highest to the lowest, a fertile source of death and disfigurement and an object of universal dread.

During the period between the death of Jenner and the end of the first quarter of the nineteenth century certain facts in regard to the methods of protection against smallpox by the use of material from cows or calves suffering from cow-pox had become fully established :—that the infection of smallpox may, by inoculation, be communicated from man to the cow; that its result is an eruption of vesicles presenting the physical characteristics of cow-pox; that the lymph from these vesicles, if implanted in the skin of the human subject, produces the ordinary local phenomena of vaccination; that the person so vaccinated diffuses no atmospheric infection; that the lymph generated by him may be transferred, with reproductive powers, to other unprotected persons; and that, on the conclusion of this artificial disorder, neither renewed vaccination, nor inoculation with smallpox, nor the closest contact and cohabitation with smallpox patients, will occasion him to betray any remnant of susceptibility to infection.¹

There was, of course, during the earlier part of the century, much opposition to the practice of vaccination and every kind of story was current as to its results. Ill-informed criticism led to debates in the House of Commons; while the supporters of Jenner founded the Royal Jennerian Institution in 1803 with the discoverer of vaccination as its first President. The medical profession, accustomed to the sight of the ravages of smallpox, were strongly in favour of vaccination, and the Royal College of Physicians, after an exhaustive inquiry, strongly endorsed it. One of the-then-puzzling features of the practice of vaccination was that, occasionally, a vaccinated person contracted smallpox and as the years went by the proportion of such cases, small though it was, tended slowly to increase. It was noted also that the protection afforded by the most efficient vaccination, absolute during the first few years, became in a proportion of cases, after a long lapse of time, less effective; and, as a consequence, re-vaccination was advocated, especially on the Continent. Simon makes the observation that about one-third of the soldiers re-vaccinated in the Prussian Army in 1833 were susceptible; but he emphasises that this was, in his opinion, susceptibility to re-vaccination and not to smallpox. In this opinion Simon was mistaken,

¹ Simon. Report to the President of the General Board of Health on the History and Practice of Vaccination, May 9th, 1857.

and a number of years were to elapse before it became clear to the epidemiologists that the immunity conferred by vaccination was always a waning immunity.

In 1840 the Vaccination Act¹ provided that persons might require vaccination at the cost of the public and this Act, the first of its kind in this country, was to be administered locally by the Poor Law Guardians. The Vaccination Act, 1853², made it obligatory on parents and guardians to arrange for the vaccination of infants within four months of birth. Compulsory vaccination for *all* infants was a long step forward for a Victorian Parliament to take and Sir John Simon justifies it on the ground that "the man who indulges in a preference for smallpox does so to the detriment and danger of his neighbour." In practice the compulsory side of the Act soon became a dead-letter as there were no provisions for its actual enforcement. But the number of infant vaccinations remained high—at that period about two-thirds of the births—and this measure occasioned a rapid fall in the incidence of smallpox. During nine of the years between 1841–53 the average annual death rate from smallpox, per million of the population, was 304; while in 1855, after the Act had come fully into operation, this rate had declined to 132.³

An important part of the machinery for the operation of the Vaccination Acts was the National Vaccine Establishment founded in 1808.

Organisation of the Medical Profession

The event which provided the impetus for the future organisation of the medical profession was the formation by Linacre in the year 1518 of a body which was later called the Royal College of Physicians. Linacre became its first President and continued in that office until his death in 1524. During the whole period of its history the Royal College of Physicians has exercised a profound and beneficial effect upon the organisation and development of English medicine. It laboured to establish qualifications, approved by law, which all who

¹ 3 & 4 Vict. cap. 29. The practice of vaccinating with material obtained from a smallpox patient, in the hope that immunity would be secured by a mild attack of the disease, was introduced into this country from Turkey by Lady Mary Wortley Montagu, wife of the British Ambassador, in 1721. Many deaths resulted from this method of "arm-to-arm" vaccination, but it was not forbidden by law until 1840. Up to 1881, lymph was mainly obtained from the vesicles of persons recently vaccinated, and to a small extent from cows suffering from cowpox. Calf-lymph was issued officially in 1881 and glycerinated calf-lymph in 1896–7 (see p. 172).

² 16 & 17 Vict. cap. 100.

³ Simon. Report to the President of the General Board of Health on the History and Practice of Vaccination.

practised medicine should possess ; it attempted to abolish quackery and, since it was founded, it has emphasised the value of research and encouraged the progress of preventive medicine. The first medical Act was however, passed before the founding of the College. This was the Act passed in 1511, in the reign of Henry VIII, which provided that no one should be authorised to practise medicine in London unless he had been examined, approved and registered by the Bishop of London or the Dean of St. Paul's and, outside London, by the Bishop of the diocese. It does not appear that this Act sufficed to prevent ignorant persons from treating patients to "the grievous hurt, damage and destruction of many of the King's liege people." Nevertheless, nearly three and a half centuries passed before an efficient Act of Parliament for the organisation of medical education and the registration of practitioners reached the Statute Book, and in the intervening period the profession passed through the stages of the barber, the barber-surgeon and the apothecary.

A second Medical Act received the Royal Assent in 1858, and it was highly desirable that the medical profession should be effectively organised at a time when the State was assuming responsibility for some part of the care of the health of the citizen. That there was urgent need for a standard of qualification was not in doubt. At the time when the Act was passed there were twenty-one different sources of qualification within the United Kingdom, and this represented twenty-one different standards each fixed at the discretion of the examining authority without any reference to the others. There was no known minimum standard of knowledge for qualification, the examining bodies were completely irresponsible and there were suggestions that all was not well with the system of examinations. Simon's observations on this matter are interesting : " . . . so that ' Doctor ' and ' Physician ' and ' Surgeon ' and ' Apothecary ' are words which have no general and settled meaning, either as to the kind and degree of education implied in each title respectively, or as to the sufficiency of the examination through which the bearer must have passed."¹ He refers to an examination of the titles published in the Medical Directory and says that of 7,464 practitioners holding the Diploma of the English College of Surgeons² and commonly known as " Surgeons " more than a fifth part possessed no second title³ ; and of 6,784 persons holding the licence of the English Society of Apothecaries about 13 per cent. were apparently

¹ Simon. Memorandum prepared in 1858 by the Medical Officer of the General Board of Health.

² The Royal College of Surgeons of England was founded in 1800.

³ That is, in medicine.

unpossessed of any diploma to guarantee their knowledge even of the rudiments of surgery. To add to the existing chaos there were many medical titles which only possessed a local value. Thus the possessors of diplomas of the English and Irish Colleges of Physicians and Surgeons might not practise in Scotland, Scottish or Irish general practitioners might not act as apothecaries in London and physicians might be lawfully practising in Manchester, Liverpool, Oxford or Cambridge whom the law considered disqualified from practising in London.

In the memorandum submitted by Simon there were contained a number of comments and recommendations in regard to the Medical Bill which was then before Parliament. He suggested that the profession should be governed by a Professional Council which should be composed of seventeen representatives of the universities and medical corporations and six appointed by the Crown; and he urged that the future candidate for legal recognition as a "qualified medical practitioner" must have attained a certain standard of knowledge; and his attainment of this standard must have been attested by a certain sufficient examination, the Council being given the power to fix the standard. Simon advised that if the power was given to the Council to lay down a standard of knowledge for the qualifying examination, in both subjects, it should follow that the recognised medical practitioner should be allowed to claim the right of practising in any part of the United Kingdom.

The principal requirement of the Medical Act, 1858, was the establishment of a General Council of Medical Education and Registration which should keep a register of medical practitioners qualified to practise under the Act, and should have the duty of defining the qualifications and conditions in respect of general and professional knowledge and the course of study which should entitle persons to be registered.

This was an important Act of Parliament looked at both from the point of view of the medical profession and of the interests of Public Health. In the past incalculable harm had been caused to the health of countless individuals by the unskilled ministrations of unqualified or imperfectly qualified practitioners, and the Act made it certain that in course of time this type of practitioner would vanish from the scene. The Act was prepared under the directions of the President of the General Board of Health, Mr. Cowper, and Mr. Simon, the Medical Officer to the Board, had much to do with its drafting for introduction into the House of Commons. At the outset this Bill suffered a mischance as there was a change of Government just before it was introduced and Mr. Cowper presented

it as a private member. It was somewhat modified by the new Government and then passed into law. The Medical Act, 1858, showed certain defects when the General Medical Council began to administer it, notably that a minimum qualification in medicine or surgery could be registered alone, and it was amended in 1886.

Factory Legislation

During the period 1848–1858 legislation for the reduction of the hours worked in factories made little progress in the face of the violent opposition which any attempts at interfering with the relationship between masters and workpeople always encountered. Indeed, the movement for the reform of conditions in factories sustained a serious set-back when the inspectors, appointed under the Factory Act, 1833, discovered, as a result of their experiences of administering the clauses relating to hours of work, that these could readily be evaded. In the first place it was their duty to ensure that no children under the age of nine worked in the factories, and that none between the ages of nine and thirteen worked more than eight hours a day. The difficulty was to obtain proof of the ages of the children they found working in the factories. The Births and Deaths Registration Act, only passed in 1836, was of no help until late in the 'forties, and baptismal certificates and entries in family bibles were often doubtful evidence. Section 13 of the 1847 Act, which required a certificate from a surgeon or physician that the child had the "ordinary strength and appearance" of a child of nine years, was of little value to the inspectors because of the doubtful competence and qualification of the doctors who gave the certificates. The parts of the Factory Acts which enjoined attendance at school for half-timers were rendered nugatory in the case of the majority of children by the scarcity of schools. By far the greatest difficulty which the inspectors encountered was the tendency of a minority of employers to evade the requirements of a ten hours' day for women and young persons by introducing the "relay" system, by which the factory machinery was kept going for fifteen hours a day and the operatives given irregular times off duty. It was thus impossible for the inspectors to ascertain how much time an individual operative had worked and in this way the primary intentions of the Act were, in many textile factories, completely nullified. Most of these difficulties were removed by the Factory Act, 1850, which laid down a normal working day in textile factories, *i.e.*, in respect of women and young persons, from 6.0 a.m. to 6.0 p.m., with one and a half hours for meals.¹ One implication of this arrangement for women and young

¹ On Saturday the mills were to close at 2.0 p.m.

persons was that adult males, in an industry with so much female employment, would also work similar hours and the knowledge of this fact accounted for at least part of the support given to the campaign by the male operatives.

The device of the statutory "normal working day" was of the greatest importance in connection with factory legislation because, for the first time, it became practicable to enforce the limitation of hours of employment. The ten hours' day, applicable only to women and young persons and covering only the textile trades, became the ideal which the reformers, anxious to extend this protection to other occupations, adopted for the next stages in their campaign.

For some years controversy centred round a provision in the Factories Regulation Act of 1844 that secure fencing should be placed round shafting and gearing. This requirement, if complied with, would have afforded a considerable measure of protection to the operatives and reduced the appalling accident-rate which was causing general alarm. Rules in regard to fencing, as made by the factory inspectors, were opposed by the mill-owners who formed an association which at first conducted a campaign against the inspectors' requirements, to be later transformed into a general attack upon all factory legislation. Politically, the mill-owners exerted much influence and they gained minor successes against the reformers without weakening the general body of the Factory Acts; but they were in a position to offer strenuous opposition to any extension of the Acts to factories outside the textile trades. By the middle of the 'forties the application of restrictions upon the hours worked in non-textile factories was already being discussed, and there seemed no logical reason why this measure of protection enjoyed by the operatives in the cotton mills in Lancashire should not be extended to workers in all factories. It was found, to the surprise of many, that a reduction in hours did not necessarily mean a reduction in output. Contented operatives, working shorter hours might, because they were employed under healthier conditions and possessed more leisure, produce a greater volume of output than the workers in a sweated industry. Considerations of this kind might have led to an investigation into the question of optimum hours of working in industry, but it does not seem that the reformers, always intent on the next step in factory legislation, had allowed their thoughts to proceed thus far along the paths of industrial research.

CHAPTER 3

PUBLIC HEALTH UNDER THE PRIVY COUNCIL, 1858-71

It may be well to begin this chapter by completing the account of the transfer of the Central Department from the political control of the General Board of Health to that of the Privy Council. The Privy Council had centuries of tradition behind it both as a consultative and as an executive body. Before the end of the eighteenth century it fulfilled many of the functions discharged to-day by appropriate Government Departments. As the power of the Cabinet in matters of administration increased, that of the Privy Council declined. At one time or another the Council had control of much of the work done later by the Secretary of State for Foreign Affairs and it has possessed duties in regard to Trade and Plantations, Education, Agriculture and many other matters which are now administered by Government Departments. It seemed, therefore, appropriate in 1858 that Public Health should be transferred to the Privy Council and it was hoped by many that under the sheltering wing of this august body most of the storms which raged around the General Board of Health, in both its original and its reconstituted forms, would be stilled.

The Public Health Act, 1858,¹ which transferred the supervision of Public Health to the Privy Council authorised that body to conduct investigations on this subject, gave powers to appoint a Medical Officer whose duty it was to compile special and annual reports on matters affecting the health of the community, and it directed that such reports should be presented to Parliament. Unfortunately, while the Bill was being considered, the House of Commons was so ill-advised as to accept an amendment which stipulated that the Act should only last for a year, and this provision made it inevitable that the question of the future of Public Health should again be brought up for discussion in the following year. In 1859 a Government Bill, which only passed by a small majority, perpetuated the arrangements contained in the Act of 1858, without limit of time.

Simon, therefore, continued in his appointment as Medical Officer of the Privy Council and we are indebted to him for a series of masterly annual reports which deal with the years 1858-71

¹ 21 & 22 Vict. cap. 97. "An Act for vesting in the Privy Council certain powers for the Protection of the Public Health." A few days later the Local Government Act, 1858, was passed, amending the Public Health Act, 1848.

inclusive. These reports deal with an interesting period in English Public Health, during which the sanitary state of the urban areas in this country, after efforts extending over the previous ten years, was steadily improving. Such improvements, appreciable as they undoubtedly were, had not gone far enough to exercise any favourable influence upon the mortality rates. This can be seen if comparison is made between the death rates and infantile mortality rates of the quinquennial periods 1841-5 and 1851-5. In the first-named period, before any sanitary reforms had been instituted, the general death-rate (England and Wales) was 21.4 per thousand living and the infantile mortality rate 148 per thousand births; and in the second period (1851-5) the figures were slightly higher, namely, 22.7 and 156 respectively. No doubt the slightly higher mortality rates in the second quinquennium were due to the cholera epidemic of 1854-5. At best, in spite of some sanitary progress between 1848 and 1855, there had been no improvement in mortality.

Even ten years later the mortality rate remained virtually unchanged, the figures for the quinquennium 1861-5 being 22.6 and 151 respectively. The sanitary reformers at the beginning of their campaign in 1848 had been unduly optimistic about the favourable effect of some measure of sanitary improvement upon the health of the community. Their view was not only that these measures would have a marked influence upon mortality rates, but that this influence would show itself within a comparatively short space of time. In adopting this attitude they made a serious mistake. It lay in the assumption that the main factor influencing mortality rates was sanitation. They therefore neglected to consider such other influences as housing, overcrowding, nutrition, hours of work, factory conditions, and the many other environmental factors which affected the life of the individual—indeed, the whole complex of influences which the progressive urbanisation of the population brought to bear upon each member of the industrial community. The fact was that while the sanitary state of the towns improved during the twenty years between 1848 and 1868 some of the other terms in the equation of health remained unchanged. Housing was not appreciably better in 1868 than in 1848, and overcrowding had increased rather than diminished owing to the continued rise of the population and the inability of the building trade to keep pace with it. Population (England only) had risen from 14,997,000 at the Census of 1841 to 18,954,000 in 1861. This increase of nearly 27 per cent. within the short period of twenty years presented the country with grave problems, the nature of which was very imperfectly realised either by statesmen, industrialists or social reformers. Factory conditions

had not materially improved except in a limited number of industries, in spite of the strenuous efforts of Shaftesbury, Sadler and others. There were frequent periods of depression during which operatives were either on short time or unemployed, and the flow of population from the countryside to the towns continued unchecked. Clapham says that by 1851 half the population of England was living in towns and that this had never happened before in any country at any time.

While England was passing through the middle stages of the Industrial Revolution, not without much tribulation, something was happening on the other side of the Channel which was destined to exercise profound effect upon Public Health. What was happening was associated with the name of Pasteur, a chemist and not a medical man, but one whose name will ever be honoured by the medical profession for the researches which gave us the science of bacteriology. *Louis Pasteur* (1822–95) studied chemistry and physics at the *École Normale* in Paris and, while still a young man, commenced his researches on the differences between tartaric acid and racemic (or paratartaric) acid—two substances with an identical chemical composition but with different physical characteristics. The main physical difference between these compounds was that while racemic acid had no effect on polarised light, tartaric acid solutions rotated the plane of polarization to the right. Pasteur noted, however, that the crystals of racemic acid were, when examined under the microscope, of two different kinds and he found that when these were separated into two groups solutions of the one rotated polarized light to the left and the other to the right. Thus Pasteur founded the science of stereo-chemistry which has elucidated so many obscure problems. His most important work commenced when he was Dean of the Faculty of Science at Lille University where he interested himself in the study of the processes of fermentation. In his researches on fermentation Pasteur initiated the method of working with a simple culture medium in which the chemical changes could be more readily observed.¹ By the use of this device, now extensively used in bacteriology, he obtained conclusive evidence that the process of fermentation was due to living organisms contained in the yeast.

From this point Pasteur turned his attention to the hotly disputed question of spontaneous generation which had puzzled scientists and philosophers for many centuries. The answer finally turned upon precise experimental work and at this Pasteur was an expert, but the controversies on this fundamental subject, especially that with Bastian, lasted up to the end of Pasteur's life. In 1857 he

¹ Fleming, Sir Alexander, "Louis Pasteur," *Brit. Med. J.*, April 19th, 1947.

presented to the Lille Science Society and to the Académie des Sciences in Paris the results of his researches into lactic fermentation. The controversy on spontaneous generation continued and Pasteur showed experimentally that yeast water could be preserved uncontaminated indefinitely if it was kept in a flask, boiled to kill any germs in it, and then sealed. He, and other investigators like Tyndal in this country, emphasised again and again that the so-called successful results obtained by the proponents of spontaneous generation were due to contamination of the medium, usually by organisms from the air. Before the end of the century the case for spontaneous generation had been lost; the science of bacteriology, all important to Public Health, had been placed on a firm foundation.

Pasteur's other famous investigations were into the silk-worm disease and into parasitic disease of wine, and he saved for his country two vital industries by his work on these subjects. Asked on one occasion why he had not turned these researches into sources of profit for himself Pasteur replied, "A man of science would complicate his life, the order of his thoughts, and risk paralysing his inventive faculties, if he were to make money by his discoveries."¹ This reply was characteristic, for Pasteur was not only a great scientist but a great man.

Addressing Pasteur at the great and enthusiastic gathering in Paris on his seventieth birthday Lord Lister said, "Truly there does not exist in the wide world an individual to whom medical science owes more than to you."²

Von Pettenkofer (1818–1901).—Another scientist whose researches during this period were to have great influence on Public Health was von Pettenkofer, a physiological chemist, who became Professor of Pathological Chemistry in the University of Munich in 1853. The sanitary condition of Munich at that time was probably worse than that of any English town, and it became the breeding ground for typhus and typhoid and a favourable field for an explosive epidemic of cholera on the occasions when that particularly fatal disease visited Europe. Pettenkofer, who had received information about Snow's researches in London into water-borne cholera, attempted to conduct similar investigations into the water supplies of Munich, but he failed, after the most careful inquiries, to prove any connection between water distribution and the cholera cases.³ Pettenkofer then directed his attention to the soil and sub-soil water around Munich and by means of Pettenkofer wells sunk to various

¹ Walker, M. E. M., *Pioneers of Public Health*, p. 148.

² Guthrie, Douglas, *A History of Medicine*, p. 285.

³ Walker, M. E. M., *Pioneers of Public Health*, p. 120.

distances he measured the level of the sub-soil water during the times of epidemics of cholera and typhoid fever. According to his theory the necessary conditions for the spread of these diseases were, "the presence of the specific germ in the soil; a susceptible population predisposed to infection; and a soil saturated with organic matter, together with conditions of porosity affected by temperature and moisture or by the rise and fall of the ground water."¹ This seems complicated as compared with the simplicity of Snow's discoveries about the water-borne method and the person-to-person method of the transmission of cholera, and it is remarkable that Pettenkofer, who was at once a brilliant and a thorough investigator, should have failed to confirm at least some of Snow's results. Pettenkofer succeeded in persuading the authorities in Munich to improve the water supplies and revolutionize the sewage systems, and epidemics of cholera and typhoid virtually disappeared. He published a treatise on the ventilation of houses and did much research into the chemistry of proteins.

Other researches of importance to Public Health were those in connection with diphtheria. This disease was known to the ancients, having been described by Aretæus about the second century A.D.

There had been epidemics of a throat disease, referred to by various names, in New England in 1735-6, and this spread amongst the colonists to other parts, including New York. This "throat distemper" was associated with a corrosive ulceration of the fauces or "an infiltration and tumefaction in the chops and forepart of the neck . . . occasioning a strangulation of the patient in a very short time." Cases of this disease were reported in London in 1739 in the family of Henry Pelham, a relative of the Duke of Newcastle, and in other important families. Starr's narrative of diphtheria in Liskeard entitled *Account of the Morbus Strangulatorius* was published in January, 1750. (See Creighton's *History of Epidemics in Britain*, Vol. II, pp. 685-95). Diphtheria and scarlet fever were, of course, often confused. The former disease does not seem to have obtained a permanent hold in this country until after the middle of the nineteenth century.

The classic description of diphtheria was that given by Pierre Bretonneau (1771-1862) who was the first to use that name, and (in 1825) to introduce tracheotomy for the relief of laryngeal diphtheria.

Before the year 1861 diphtheria was grouped with scarlet fever in the returns of the Registrar-General; but even after that date the

¹ Walker, M. E. M., *Pioneers of Public Health*, p. 122.

statistics were inaccurate for many years by reason of faulty nomenclature and classification.¹

Medicine in the Middle Years of the Nineteenth Century

Medicine, during this period, was still largely empirical. Treatment, which had advanced somewhat beyond the stage of bleeding and purging, was nevertheless still mainly based upon traditional practices. By the middle of the century medicine had some definite successes to its credit and some of its work, largely in the sphere of diagnosis, was based upon scientific research. The eighteenth century had witnessed the introduction of two important methods of diagnosis—percussion and mediate auscultation. With the first of these the name of Auenbrugger is associated and with the second Laënnec. Auenbrugger (1772–1809) had used percussion to ascertain the level of wine in his father's casks and it occurred to him to use the same principle on the human chest when he was appointed physician to the Military Hospital of Vienna. Laënnec (1781–1826), the originator of the stethoscope, became physician to the Necker Hospital, Paris, in 1816, where he had occasion to examine a patient whose stoutness made the hearing of the heart sounds difficult. To assist him in this case he rolled a piece of paper into a cylinder and placed one of the open ends to his ear and the other to the chest. To Laënnec's surprise he found he could hear the heart sounds more perfectly than when he applied his ear directly to the chest. Laënnec's famous book, in which he expounded the principle and uses of this new method, was entitled *De l'Auscultation médiate*.²

Nevertheless, in spite of the foregoing and some other, perhaps less important, medical discoveries the equipment of the physician in the middle of the nineteenth century was by no means extensive. The surgeons, in one respect, were in a rather better position than the physicians because by the 'fifties of last century they were beginning to use anæsthetics—probably the greatest single boon conferred by medicine on suffering humanity. Apart from the employment, in the United States, of nitrous oxide gas by dentists for teeth extraction, the first anæsthetic was ether. The discovery of the anæsthetic properties of ether was made in the United States, and the credit for its first use in that country is variously ascribed to several claimants, including Crawford Long (1815–78) and William Thomas Morton (1819–68). This drug was first used as an anæsthetic for a

¹ Thorne Thorne, R., *Diphtheria—its Natural History and Prevention* (1891).

² One of Laënnec's sayings, quoted in Thorne Thorne's book on Diphtheria is "that diseases cannot be more certainly distinguished than by their anatomical characters."

surgical operation in this country by the famous Robert Liston (1794–1847) at University College Hospital, London, on December 21st, 1846. A little later chloroform was introduced, and the same controversy as in the case of ether arose as to the prior claim. In this case the credit must go to this country, and the claimants are Professor James Young Simpson (1811–70), of Edinburgh, and David Waldie, a chemist of Liverpool. But the surgeons, until the discoveries of Lister, had still to face the dangers of sepsis—gangrene, erysipelas and pyæmia—especially in hospital wards, and the appalling mortality which the infection of operation wounds brought about.

Nevertheless, progress in medicine was accelerating by the middle of the nineteenth century, just as it was in the field of Public Health, and some of the greatest figures in all the long history of the art of healing come upon the scene at this time and during the next thirty years. As this is a history of Public Health and not of pure medicine it will only be possible to refer to a few of them. One of the greatest of these figures was that of Sir Charles Bell (1774–1842). Bell acquired the Windmill Street School of Anatomy and there he studied the principles of anatomy and surgery; and in 1815, after he had treated some of the soldiers wounded in the Battle of Waterloo, he was appointed surgeon to the Middlesex Hospital. It was while he was connected with this hospital that Bell conducted his famous researches into the functions of the nervous system. He succeeded in distinguishing between sensory and motor nerves and described many of the functions of the spinal column and the nerves which proceed from it. The results of his work are embodied in the classic volume *The Nervous System of the Human Body*. Bell finally became Professor of Surgery at Edinburgh University.

The first Anatomy Act, providing for the use of unclaimed bodies in Poor Law Institutions for teaching purposes, was passed in 1832 and arose from the scandal created by the revelation of the practices of Burke and Hare in Edinburgh. These men murdered thirty-two people and sold their bodies to the Medical Schools for dissection purposes. The Professor of Anatomy at Edinburgh, Robert Knox, although quite innocent, was involved in the scandal and he had great difficulty in clearing himself of public reproach. Of the physiologists of this time, the most noted were William Sharpey (1802–80) who was Professor of Physiology at University College, London, and discovered ciliary activity, Augustus Waller (1816–70) who conducted researches on degenerative nerve changes, and the great French investigator, Claude Bernard (1813–78). Bernard, who studied under Magendie, undertook an extensive series of researches

into the physiology of the digestive system, including in his investigations the stomach, liver and pancreas. He showed that the liver could build up glycogen from sugar besides secreting bile. Some of Bernard's most important work was done on the functions of the sympathetic nervous system. Claude Bernard was the greatest of the nineteenth century physiologists and his influence upon the scientific progress of medicine was immense.

Of the physicians who rose to fame during the middle period of the century may be noted the names of Richard Bright (1789–1885), Thomas Addison (1795–1860), Robert Graves (1796–1853) and William Stokes (1804–78), all of whom gave their names to well-known diseases. In the field of surgery the predecessors of Lister were Robert Liston, James Syme (1799–1870) and the famous Sir James Paget (1814–99). Paget was intolerant of those who separated science from medicine, holding up to the profession, and to all those who followed him, ideals of precise investigation into the causation of diseases.¹

Florence Nightingale (1820–1910).—It would not be possible to consider the art of medicine during the middle years of last century without reference to the lady whose zeal and energy initiated great measures of reform in the standards of nursing in hospitals and in the methods of nurses' training. At that time the science of bacteriology had not been heard of and hospitals and hospital methods were not only not aseptic but positively dirty, with the result that infections of all kinds were communicated from one patient to another by the hands of nurses and doctors and in many other ways. A patient entering hospital on account of some comparatively simple condition might be infected and die because of the lack of even ordinary cleanliness and hygiene in the ward.

Miss Nightingale was never tired of criticising the ways in which hospitals were conducted at that time, and she possessed a caustic tongue which was often of service when she was faced with obstruction from that considerable section of the medical profession which was instinctively opposed to change. Her most celebrated work was in connection with the Crimean War when traditional conservatism allied to gross inefficiency had made the British military hospitals at Scutari hot-beds of infection and disease. It needed all Florence Nightingale's driving power to obtain reforms in the Army's arrangements for the treatment of the sick and wounded, and it was necessary to use all the influence she possessed at home to that end. She was assisted in this work by Dr. John Sutherland and Dr. Hector Gavin who had been sent to the Crimea by the General

¹ Guthrie, Douglas, *History of Medicine*, p. 315.

Board of Health as members of a Sanitary Commission which dealt with the arrangements for Army and hospital hygiene.¹

On her return to England Miss Nightingale continued her campaign for the reform of hospital methods, visiting hospitals all over the country, and she had a large share in securing the appointment of Dr. Edmund A. Parkes as Professor of Hygiene at the new Army Medical School, the inauguration of which was due to her. One of the most lasting parts of Florence Nightingale's work was the founding of the Nightingale Nursing Home at St. Thomas's Hospital in June, 1860; and it was from this date that modern nursing in this country may be said to have begun. Her *Notes on Nursing* published in 1859 was for many years the "bible" of the nursing profession. She encouraged the visiting of the homes of the people by trained visitors who are the prototypes of the modern health visitor, was interested in the reform of the nursing services in workhouses, and assisted Mr. W. Rathbone of Liverpool in 1862 in his pioneer work for the establishment of a system of district nurses.

Dorothy Wyndlow Pattison (1832-78).—Another of the great pioneers in the profession of nursing was Dorothy Pattison who was born at Hauxwell, near Richmond, in the North Riding of Yorkshire in 1832. Like Miss Nightingale, Dorothy Pattison came of an upper-class family and she possessed much of the same determination and driving-force which enabled her senior, both in age and in nursing experience, to make her way through the many obstacles which inevitably beset the path of the pioneer.

At the age of 29 she became friendly with some of the Sisters of the Good Samaritans at Redcar and some years later joined this nursing Order. In 1865 she became a nurse at the cottage hospital at Walsall, a manufacturing town in the Black Country which then had a population of about 35,000. Later, when she had thoroughly learnt her nursing duties, Sister Dora, who was then becoming well-known in Walsall, was placed in charge of the cottage hospital and

¹ John Sutherland (1808-91) graduated M.D. at Edinburgh in 1837. He edited for about a year the *Liverpool Health of Towns Advocate* and was afterwards a member of the Metropolitan Health of Towns Association, being associated with Southwood Smith in the campaign for the Public Health Act, 1848. Sutherland became a medical superintending inspector of the General Board of Health and headed the Sanitary Commission sent to the Crimea.

Hector Gavin (1816-55) also graduated M.D. at Edinburgh. Little is known of his early life and he is not mentioned in the D.N.B. He was a member of the Metropolitan Health of Towns Association and became a medical inspector of the General Board of Health. As one of Her Majesty's Sanitary Commissioners in the Crimea he died at Balaclava on April 21st, 1855, in tragic circumstances. While in the act of handing his pistol to his brother Mr. William Gavin, a veterinary surgeon attached to the 17th Lancers, the weapon accidentally went off and he was killed. (*Gentleman's Magazine*, 1855, p. 653.)

of another of twenty-eight beds erected to replace the original building. In the smallpox outbreak in Walsall in 1875 she was placed in charge of the Borough's Epidemic Hospital and, often almost alone, tended her patients. On the cessation of this epidemic Sister Dora returned to take up her work at the Cottage Hospital.

In the course of time Sister Dora, with her high intelligence, became not only a skilful nurse but a successful teacher. One of her special interests was the treatment of accidents to the eye which, in Walsall, were excessively frequent. In order to understand further this part of her nursing duties she engaged in the dissection of the eye and studied cases in the Ophthalmic Hospital in Birmingham. Her great knowledge of anatomy and her experience of surgery enabled her to act in the place of a house-surgeon at the Walsall Cottage Hospital, and such was her personality that the visiting doctors encouraged her to perform minor operations and to set fractures. At that time she was described as "a tall black-haired, handsome woman, brimming over with fun and energy." Sister Dora was a deeply religious woman and she taught her patients the Scriptures as well as hygiene and personal cleanliness. Apart from her duties at the Hospital she undertook, in conjunction with the local clergy, missions to "fallen" women in the slum quarters of the Borough and became probably the best-known and certainly the best-loved figure in the whole of that district.

In 1877 she became aware that she was suffering from cancer and was advised that her further period of activity at the Hospital was likely to be short. Nevertheless, she refused an operation and continued, as long as her strength lasted, to carry on her duties in the wards. Towards the end, and after she had left Walsall, Sister Dora stayed at a private nursing home in Fitzroy Square and had the privilege of attending some of Lister's operations, in which he employed his new technique.

A new hospital, built to replace the Cottage Hospital at which she had worked for so many years was opened on November 4th, 1878, by the Mayor of Walsall "in the name of Sister Dora."¹

Agnes Elizabeth Jones (1833-68) was a contemporary of Miss Nightingale and Sister Dora. Trained at the Nightingale Nursing Home at St. Thomas's Hospital, Miss Jones at the early age of 28 was recommended by her chief for appointment as a trained nurse at the Brownlow Hill Institution. This institution contained 1,200 beds and to the hospital wards some of the most difficult and unruly

¹ See *Sister Dora*, by Margaret Lonsdale, and *True and Noble Women*, edited by Henry C. Ewart. The author is indebted to Lady Woolton for drawing his attention to these books.

elements from the poorer parts of Liverpool were admitted. Up to the year 1861 no trained nurse had been employed at a Poor Law Institution anywhere in the country and Agnes Jones recognised, when accepting the post for which Miss Nightingale had designated her, that she was to undertake pioneering work in exceptionally difficult, and even dangerous, circumstances.

At that time, before Agnes Jones' appointment, nursing duties at Brownlow Hill were superintended by two female officers who had not been trained as nurses, and their only assistants were pauper women who were as untrustworthy as they were unskilful. From the staff point of view this workhouse was no worse than most others in the country. The idea of engaging trained nurses to deal with the pauper patients at Brownlow Hill had occurred to Mr. William Rathbone who was already (p. 236) noted locally for his work in connection with home nursing. Not only did Rathbone make the suggestion to employ trained nurses, but he and his family went so far as to agree to defray the cost of this project for a period of three years. This offer was accepted by the Liverpool Select Vestry and in this way an experiment fraught with immense possibilities for the future of nursing in Poor Law hospitals began. Soon after her appointment Miss Jones and the few nurses who came with her from St. Thomas's attempted unavailingly to train some of the able-bodied women paupers as nurses. No less than fifty-six of these were selected, paid a small wage and given the title of "Assistant Nurse," but all broke down.

It is mentioned in other parts of this book that nursing, throughout most of the nineteenth century, was a dangerous occupation. Miss Jones had been in charge of the nursing arrangements at Brownlow Hill for less than seven years when she contracted a severe attack of typhus, then highly prevalent in that fever-ridden borough, and from this she died on February 19th, 1868, at the age of 34. By her courage and her self-denial she had set an example which was followed by other trained nurses, so that, in the course of time the staffing of Poor Law hospitals and institutions radically improved throughout the whole country.

In the chapel of the Brownlow Hill Workhouse a beautiful statue of the Angel of the Resurrection by Tenerari, on the plinth of which there are inscriptions by Miss Nightingale and the Bishop of Derry, preserved her memory. This statue is now in the chapel at the Walton Hospital, Liverpool, the Brownlow Hill Institution having been demolished. Miss Nightingale's tribute to Agnes Jones is as follows:—

"She came to Her Lord, offering to Him, for His poor and

sick, no sad and disappointed spirit, but the first fruits of her heart, in days when she was full of health and cheerfulness.

She brought the world's sense and practical ability to God's work, and God's Faith, Hope and Charity, to the world's work, earnestly seeking the Saviour's spirit in following the blessed steps of His most holy life.

She died at her post among the poor and sick, while yet in the flower of her age. And thus she lived the life and died the death of the children of God, who are the children of the Resurrection."

Miss Nightingale also said of her elsewhere "In less than three years she had reduced one of the most disorderly hospital populations in the world to something like Christian discipline, such as the police themselves wondered at. She had led, so as to be of one mind and heart with her, some fifty nurses and probationers. She had converted a Vestry to the conviction as well as the humanity of nursing pauper sick by trained nurses, the first instance of its kind in England. She had disarmed all opposition, so that Roman Catholic and Unitarian, High Church and Low Church, all literally rose up and called her blessed."

Simon's Reports to the Privy Council

The state of the Public Health in England during the period from 1858 to 1871, when the Privy Council was the Central Department, can be assessed with a fair degree of accuracy from the 14 annual reports which Mr. Simon, in accordance with his statutory duty, addressed to that body. Several of the earlier reports display the author's interest in the subject of vaccination which, as the outstanding method of Preventive Medicine, was of the utmost importance at that time; and each gives in much detail the facts about the distribution of disease in England during the year to which the report refers and the means taken to control it. Of all the diseases current in the sixth and seventh decades of last century, diarrhœa, both as a disease in itself and as a symptom of cholera and dysentery, occupied a place of great importance in the minds of the epidemiologists. "Cholera, diarrhœa and dysentery," Simon remarks, "have, during the nine years 1848-56, been fatal to 237,498 persons." Accordingly, in 1859, an extensive inquiry was commenced in the districts where diarrhœa was most prevalent. These were Coventry, Birmingham, Wolverhampton, Dudley, Merthyr Tydfil, Nottingham, Leeds, Manchester, Chorlton and Salford; and Dr. Greenhow, engaged as a temporary Inspector under



SIR JOHN SIMON (1816–1904)

the Public Health Act, made the necessary investigations. His report emphasised that diarrhœal deaths were largely preventable and that the method was communal and personal cleanliness. An interesting comment in this report is that the extensive employment of women in factories is, unless care be taken to avert its effects, a sure source of very large infantile mortality; and that infants who should be at the breast are commonly ill-fed or starved, and have their cries of hunger and distress quieted by those various fatal opiates which are in such request at the centres of our manufacturing industry.¹

Another interesting discussion centres around the comparatively new disease—diphtheria. This was producing alarming epidemics, which had been occurring since 1855. It appeared for the first time as an epidemic in Cornwall in that year but it was not fully known to the General Board of Health until 1857. In October the Board's "Weekly return of diseases in the Metropolis" described the clinical nature of the disease in some detail, mentioning that it was referred to as "inflammation of the throat," "putrid sore throat," "malignant sore throat," "disease in the throat" and "throat fever."²

The main subject discussed in the third report (1860) is that of diseases of the lung, which, according to Simon, are divided into two groups—tubercular phthisis and bronchitis. He considers that the great development of these diseases in particular districts is connected with the industrial relations of the people. Indoor branches of industry, in the case of both males and females, were especially productive of these diseases. Reference is made to the workers in textile factories, to the monotony, deficient bodily exercise, physical seclusion from sun and air and of mental privation from what is beautiful and animating in external nature. "Where an industrial system is bad—bad, either in excessive length of daily work, or in the over-crowdedness and non-ventilation of workplaces, these evils may be vastly developed."³ In certain industries, notably metal-mining, metal manufacture and pottery-manufacture, the predominant lung disease was, in Simon's view, bronchitis. There is special reference to a lead-mining district in England as "the place where there is a larger proportion of widows than in any other place in the kingdom." Simon refers also to the dust diseases from grinding, metal-mining, flax-hackling, cotton-carding, and in the pressing and scouring rooms of a pottery.

¹ Simon. Second Report to the Privy Council, 1859.

² *Ibid.*

³ Simon. Third Report to the Privy Council, 1860.

Simon was evidently determined to continue and extend the medical inspector's researches into the prevalence of industrial diseases in the manufacturing areas of this country and in his fourth annual report to the Privy Council, for the year 1861, he communicated the results of Dr. Greenhow's further inquiries. The areas included were extensive, comprising Preston, Blackburn, Macclesfield, Leek, Coventry, Leeds and Bradford (cotton, silk, flax and wool); Stoke-upon-Trent and Wolstanton (earthenware and china); Coventry (watches); Leicester, Hinckley, Nottingham, Radford and Basford (hosiery); Tring and Berkhamsted (straw-plaiting); Towcester and Nottingham (lace); Redruth, Penzance, Wolverhampton, Merthyr Tydfil and Abergavenny (tin, copper, coal, iron and lead mining); and Merthyr Tydfil, Abergavenny, Wolverhampton, Bromsgrove, Aston, Birmingham and Sheffield (smelting of metals and the making of metallic instruments). Dr. Greenhow's investigations were of the utmost significance to the future of industrial health. Apart from unwholesome influences due to the special nature of particular occupations, it appeared from the inquiry that there were general faults to be found in indoor employment. Of these faults the most important were long hours and poor conditions, especially as regards ventilation. "Throughout the whole scale, from the humblest cottage industry even up to the highest developments of our factory system, amid infinite differences of occupation, the same great removable evil abounds. And in scene after scene of honest industry and independence, the medical eye sees monotonously this one terrible shadow of suffering and death."¹ Phthisis and tubercular diseases were rife amongst the industrial population at that time. Both dwelling-places and workplaces of the artisans were ill-ventilated, with the atmosphere contaminated by the products of combustion; work was monotonous and sedentary, and the working-day sometimes extended to 12, 14 and even 16 hours. But, as the report proceeds to say, in many employments there were special sources of danger to the lungs by way of direct irritation. "In some gigantic branches of our national industry (textiles, earthenware, china, steel and iron, are given as examples) sometimes nearly all who are employed in particular departments of the business, break down prematurely with lung disease, under pressure of the mere dustiness of their occupation." "Miners, as a class—and this class includes in England alone more than 300,000 workmen—break down prematurely with bronchitis and pneumonia, caused by the atmosphere in which they labour."²

¹ Simon. Fourth Report to the Privy Council, 1861.

² *Ibid.*

The typical examples which Mr. Simon gives to illustrate the foregoing general observations were as follows :—

- (a) Grinders and polishers of steel in such places as Bromsgrove, Alcester, Sheffield, Aston and Birmingham. Their work consisted in giving an edge and smoothness to knives, forks, razors, scissors, files, scythes, swords, bayonets, etc., and the process involved the use of revolving grindstones and emery wheels and the evolution of dust which was of excessive hardness. Some steps had been taken by the factory owners to reduce dust emission into the atmosphere by the use of revolving fans, but devices of this and other kinds were not compulsory and were not in universal use. Few of the grinders, it is stated, worked many years without suffering more or less from the occupation. The symptoms are given as :—oppression at the chest, shortness of breath, cough and expectoration and later, catarrh. “ After a while the bronchitis which they indicate gets complicated with solidification of the lung; and eventually, it is said, the lung undergoes changes of an ulcerative kind.”
- (b) China-scourers and certain of the potters. The china-scourers removed loose flint-powder from the baked china and in doing so they sent much flint dust into the atmosphere about them. This dust was a most dangerous irritant to the lungs, and in time caused a train of symptoms which included bleeding from the lungs. “ Comparatively few china-scourers continue very long at the employment.” Potters were exposed to the influence of a dusty atmosphere, but in a less degree than the china-scourers.
- (c) Textile workers. In carding rooms of cotton factories the conditions were most injurious because of the dusty atmosphere, full of cotton fibres. Few carding-room operatives reached the age of fifty years without having acquired an amount of chronic bronchitis which at no distant time disabled them.
- (d) Miners. Air in ill-ventilated mines was, according to Simon, greatly more impure than the air of ill-ventilated above-ground work-places. There was an excess of carbonic acid gas and a deficiency of oxygen, and the air contained grit and the acid fumes of combustion. Accordingly, miners suffered almost universally from various lung diseases. Simon, however, mentioned a remarkable

exception to this rule, namely, the miners of Durham and Northumberland. Here, because of efficient ventilation, there was no excess of mortality among the miners.

- (e) Domestic manufacture. Examples of this kind of industry were straw-plaiting at Berkhamsted and Tring, glove-making at Yeovil, lace-making at Towcester and silk weaving at Leek. Unfortunately women and children suffered most in these industries. Hours worked were excessive, from 10–14 and more per day, and in some cases children began at an early age—often at four years. Hours of work in the glove-making industry sometimes reached 14 per day and female glovers who needed to maintain themselves were compelled to work “very diligently and sit very closely to their labour.” Lace-makers conducted their labours in very small, overcrowded and ill-ventilated houses. Working at night in winter, several packed themselves into one room lighted by a single candle. Girls and boys in this industry began work as early as the age of seven.

After a very long description of the injurious effects upon health of many occupations, of which the foregoing is a summary, Simon discussed the question of the preventability of industrial lung disease. Improvements which he suggested were :—The improvement of domestic and factory ventilation, the reduction in the hours of working for children, and the substitution of harmless processes for injurious ones. He emphasized that some establishments in the same industry were better ventilated and otherwise more satisfactory from the health point of view than others, and suggested that if all could be brought to the higher standard much benefit would follow. Some employers appeared to be unconscious of any particular responsibility in these matters while others, anxious to effect improvements in the conditions in their factories, were handicapped by lack of knowledge. The workman was not in a position to “exact his sanitary rights.” Many operatives were unaware of the fatal circumstances under which they laboured; and they were jealous of the introduction of new machinery which would supersede hurtful processes of hand labour.

“Amongst those who suffered most from unwholesome industrial conditions many defenceless persons are found—many women, many mere boys and girls, many children.”¹

In a moving passage Simon says that “year after year, as far

¹ Simon. Fourth Report to the Privy Council, 1861.

forward as any present judgment would willingly speculate, the same terrible waste of adult life must, with no great mitigation, continue, unless the Legislature see fit to provide, by special enactment, for more wholesome conditions of labour.”¹ Measures for strengthening the law in regard to the sanitation of factories, so as to make it more easily administered by the inspectors, were then discussed, and Simon suggested that the spirit of the Nuisances Removal Act might be applied, by legislation, to industrial establishments in relation to the health of the persons labouring in them and that, where difficulties were experienced, the employer should *use the best practicable means* to protect his labourer from harm; that special superintendence should be given by the Government to industries where there was more than usual danger to health; and that power should be given to the factory inspectors to take steps to deal with common sanitary faults.

Simon and his medical inspectors had clearly seen the faults of the industrial system at that time from the point of view of the health of the workers—excessively long hours of labour for men, women and children, a dusty, contaminated atmosphere producing lung disease, and insanitary conditions. These reports were a statement of the conditions in industry which was of fundamental importance to those who were advocating improved factory legislation covering all workers. But it was by no means the first time that the evils of unwholesome occupational conditions had been pointed out. This had been done by Turner Thackrah, a surgeon of Leeds, in his book *The Effects of Arts, Trades and Professions on Health and Longevity*, published as far back as 1831–2.

Associated with the subject of health in industry was the question of excessive mortality in infants, and the reports give a tragic picture of demoralisation due, in some areas, to the employment of married women in factories. Further reports deal with the evil short-time effects of such substances as phosphorus, used for making matches. In the match industry workers suffered from a painful necrosis of the jaw—“phossy jaw”—due to the fumes of phosphorus.

Simon’s fifth report, for 1862, deals with the crisis then overtaking the cotton industry owing to the American Civil War and the virtual cessation of the export of this vitally necessary raw material to this country. This industry, giving employment to two million people, had been declining for some months as imports of cotton ceased and stocks were used up, and bitter poverty resulted. Apart from the ordinary privations of the people there was alarm at the Central Department in case epidemics of typhus—“famine fever”—

¹ Simon. Fourth Report to the Privy Council, 1861.

developed; and Dr. Buchanan, of the London Fever Hospital, was despatched by the Privy Council to the threatened districts in Lancashire. He found numerous cases of typhus in Manchester, Preston and Accrington and cases, though not in large numbers, in several other towns. Arrangements were made to remove to hospital patients suffering from this disease and, where necessary, to open additional accommodation; and Dr. Buchanan discussed with local authorities and their officers the scales of poor relief which were, in some cases, insufficient to maintain health. These typhus outbreaks gradually declined in severity as the year advanced. One of the remarkable facts about this spell of unemployment was that the mortality rates of some of the towns declined; but Simon thinks that these were chance fluctuations and were not due to the absence of work-people from unhygienic factories.¹

In 1863 an investigation of the dietaries of persons belonging to the poorer labouring classes, conducted by Dr. Edward Smith, produced some interesting results. For the agricultural population the diet was superior to that of the industrial labourer and the incidence of poverty, in this respect as in others, fell most heavily upon those with large families. The worker fared better than his wife and family, "for he, in order to do his work, must eat."² But all diets were unsatisfactory. The deduction the report draws from this fact is that clothing, shelter, cleanliness would in such cases be below the necessary standards—food would come first. One interesting fact which emerges from the survey was the great difference which existed in the dietetic standards of agricultural labourers living in the various counties. In some, the diets of the agricultural labourers were 50 per cent. better than in others. Agricultural labourers in Scotland and Ireland appeared at that time to be noticeably better fed than in England. The agricultural labourer in England only received a quarter as much milk as his opposite number in Ireland or Scotland.

An important report of Simon's was that relating to hospital hygiene. At that time (1863) knowledge in regard to the spread of septic infections was scanty and in the best of the London hospitals the amount of disease caused *in hospital* was considerable. The inquiry made by Dr. Bristowe and Mr. Holmes was in respect of St. Thomas's Hospital and the occasion was the choice of a new site; and information was asked for about patients submitted to surgical

¹ An interesting description of conditions during the Lancashire Cotton Famine is given in *King Cotton* by Thomas Armstrong. For an account of conditions in Manchester at an earlier period see Mrs. Gaskell's *Mary Barton*.

² Simon. Sixth Report to the Privy Council, 1863.

operations or with accidental injuries or suffering from infectious fevers, including puerperal sepsis. This investigation finally covered every considerable civil hospital in England and Scotland and some of the more important in Ireland. Simon defines a "healthy" hospital as one which does not, *by any fault of its own*, aggravate ever so little the sickness, nor oppose ever so little the recovery, of persons who are properly its inmates. A "fault" in a hospital might be inherent, *i.e.*, due to site or construction or "a fault of keeping," as dirtiness, or overcrowding or neglect of ventilation. The report analyses the death-rates after various operations, including lithotomies and amputations. In the latter type of operation the death rate for amputation after injury was twice as great as after amputation for disease. Rates for fevers would, it is thought, have to be taken on the basis of an individual disease—typhoid, typhus, relapsing, etc.—because the death rates of different infectious diseases vary widely. Simon complains that hospital statistics were on a very imperfect footing and suggests that it was not possible to compare the relative efficiencies by such methods. (There is an interesting footnote in this report on the question as to how the first contagia arose. This is, thinks Simon, a similar question to the origin of species. Various contagia breed true, smallpox giving rise to smallpox, typhus to typhus, etc. "Presuming . . . that in the history of mankind there was once upon a time a first smallpox case, a first typhus case, etc. . . . we have no scientific reasons for denying that new 'spontaneous generations' of such contagia may take place." He thinks that if proper ward-discipline exists no patient would be allowed to expose himself to risk of close contact with cases of contagious disease. "Contagions which will not spread except by inoculation, or by the kindred agency of dirty bedding, or dirty towels, or dirty sponges, or dirty fingers, or by the drinking of polluted water, or by the effluvia from drains or cesspools, ought to be absolutely incommunicable in hospitals."¹)

Much space is devoted in the eighth report to the imported epidemics which occurred during the year 1865. ". . . to persons who had to care for the public health, the last nine months of the year were a time of continuous anxiety."² Asiatic cholera had reached Egypt in June of that year and it was feared that it would follow its usual lines of approach to this country; there were rumours of a disease resembling plague which, coming from the Ural Mountains, had spread to St. Petersburg and across the Prussian frontier; and, unparalleled in the epidemiological experience of this country, there

¹ Simon. Sixth Report to the Privy Council, 1863.

² Simon. Eighth Report to the Privy Council, 1865.

was an outbreak of yellow fever (not on a large scale) in Swansea due to an infected ship from Cuba. On investigation, the rumour about plague in Russia¹ was discovered to be unfounded but there was, in Northern Germany, an epidemic of cerebrospinal meningitis, and, independently, a few cases in this country. The cholera epidemic in Egypt gave rise, through shipping from Alexandria, to some cases in Southampton between August and November and infection spread to the surrounding area. This turned out to be a small outbreak with 60 cases and 35 deaths. Water supplies were proved to have a large share in its transmission. There was also a small epidemic of cholera at Theydon Bois, Essex, during late September and early October, 1865, in which there were 12 cases, of whom 9 died.

The outbreak of yellow fever at Swansea, at a time of almost tropical heat, was caused by infection from the *Hecla*, which entered Swansea Harbour on September 9th. This ship had cases of yellow fever on board when it left Cuba on July 26th, and there was a seaman dying of this disease and two convalescents when the ship reached Swansea. From September 15th, six days after her arrival, to October 4th, six days after her removal, cases of yellow fever occurred in the town. These cases all occurred in definite local relation to the ship, being infected by mosquitoes from on board which gained access to the land, and the number severely affected was twenty, with some milder cases.²

Simon has some wise observations to make about quarantine which obviously failed very badly in the case of the *Hecla*; and he expresses the opinion that quarantine, conducted with extreme rigour, and with the precision of a chemical experiment, will keep cholera out of any part of Europe. But he recognises that what is possible under ideally perfect conditions may fail entirely when subjected to the rough test of practical experiment. "A quarantine which is ineffective," he reports, "is a mere irrational derangement of commerce; and a quarantine of the kind which ensures success, is more easily imagined than realised. Only in proportion as a community lives apart from the great highways and emporia of commerce, or is ready and able to treat its commerce as a subordinate political interest, only in such proportion can quarantine be made effectual for protecting it."³

¹ The epidemic in St. Petersburg consisted of two forms of fever—relapsing fever and typhus.

² A similar outbreak occurred at St. Nazaire, at the mouth of the Loire, in August, 1861.

³ Simon. Eighth Report to the Privy Council, 1865.

In 1866 there were a number of outbreaks of cholera which are duly reported. Cases were arriving in Bristol, Liverpool, Hull, Grimsby and other ports from the Continent late in April and in May, June and July, and this infection from so many sides produced an outbreak of moderate dimensions in comparison with those of 1849 and 1854, but which, nevertheless, created unbounded alarm all over the country. One item of importance in regard to this epidemic is that it afforded the opportunity for further investigations into methods of treatment, into the chemical and anatomical changes which occurred and into Pettenkofer's theories. The opportunity was also to be taken to verify the "alleged experimental proofs" of the communicability of cholera. During this epidemic Dr. William Budd tried his method of disinfection in Bristol with complete success. The method, however, was a failure in Germany. As regards prevention Simon repeats the advice which he had given in previous years:—(i) that by appropriate structural works, all the excremental produce of the population shall be so promptly and so thoroughly removed, that the inhabited place, in its air and soil, shall be absolutely without fæcal impurities; and (ii) that the water supply of the population shall be derived from such sources, and conveyed in such channels, that its contamination by excrement is impossible.

This epidemic of cholera followed a similar course to that of previous outbreaks. The first case occurred in Bristol on 28th April in the person of a trader who had arrived from Rotterdam; and thereafter numerous cases arrived at the various ports in this country. There was a serious outbreak in Swansea, and on 18th July the first death in the Metropolis occurred in Poplar. In this month the Diseases Prevention Act was put into force throughout the whole of England and Wales with the result that local authorities were able to give medical relief which, in normal times, was restricted to paupers. The peak of the epidemic was reached early in September and after that it rapidly died away throughout the country. During the three months, July, August and September, 1866, 10,365 cholera deaths were registered, with 9,570 from diarrhœa.¹ Considerable assistance was given by the Medical Department to local authorities in whose areas large outbreaks occurred. Dr. Seaton, Dr. Buchanan and Dr. Hunter visited the East End of London, where the epidemic was especially severe; Dr. Buchanan visited Liverpool; and Neston

¹ Mr. J. Netten Radcliffe in a long report on the Diffusion of Cholera and its prevalence in Europe during the ten years 1865–74, appended to the Annual Report of the Medical Officer of the Privy Council and the Local Government Board for 1875, gives the total number of deaths from cholera in England and Wales in 1866 as 14,378.

was visited by Dr. Hunter, Caernarvon by Dr. Seaton and Southampton by Professor Parkes. The study of methods of treatment was undertaken by a committee consisting of Dr. Wilks of Guy's, Dr. Martin of St. Bartholomew's, Dr. Hughlings Jackson¹ of the London, and Dr. Bristowe of St. Thomas's; an investigation on the chemical changes undergone by the body was referred to Dr. Thudichum, an attempt to verify the alleged experimental proofs of the communicability of cholera was made by Dr. Burdon-Sanderson, and Mr. Glaisher of the Royal Observatory, Greenwich, dealt with Pettenkofer's theories as applied to this particular outbreak.

This series of fourteen reports which Simon submitted to the Privy Council between the years 1858 and 1871 contains some of the most valuable first-hand information which the historian can possess on the social as well as the sanitary conditions of the people of England during the middle years of the last century. The picture presented of the social and industrial life in urban areas is a gloomy one, only relieved by the strenuous efforts which were being made in many quarters (not least by Simon himself) to bring about reform. One of the most important of the features associated with the annual reports to the Privy Council is the brilliant personality of their author, who year by year brought prominently to the attention of the successive Governments which he served the grim facts about the industrial and social conditions under which so many of his fellow countrymen were condemned to live. Simon had almost every excuse to do nothing. He was given no full-time medical staff, and yet there was a multitude of conditions which urgently called for inquiry. The solution which he adopted—that of appointing temporary medical inspectors from among the highly qualified staffs of the London hospitals—possessed advantages no other method would have given him. These men were able, influential, and had the confidence of the medical profession. Many, in later years, obtained important medical appointments. Dr. Buchanan was

¹ Jackson, John Hughlings (1835–1911), the most notable of the pioneers in the investigation of diseases of the nervous system, studied medicine at St. Bartholomew's Hospital, qualifying in 1851. Shortly after, he became friendly with Jonathan Hutchinson who, throughout his career, encouraged him in his study of neurology. In 1862 he became an assistant physician at the London Hospital and in 1874 full physician. He was also appointed to the staff of the National Hospital for the Paralysed and Epileptic, and became the first President of the Neurological Society when it was founded in 1885. In 1878 the neurological journal *Brain* was founded and many of Hughlings Jackson's papers were published in it. His main claim to the fame which the medical profession has accorded him, both during his life and after his death, is that he harmonised, elucidated and systematised our knowledge of the workings of the central nervous system both in health and disease.

sent to Lancashire to investigate the possibility of outbreaks of typhus during the Cotton Famine and Dr. Edward Smith reported on nutrition; in 1865 Dr. Whitley went to Russia and Dr. Burdon-Sanderson¹ to North-east Germany to study epidemics which had broken out in those places; Dr. Greenhow was the author of several reports on industrial conditions; Dr. Ord and Dr. Smith enquired into the predisposing causes of pulmonary tuberculosis and other lung diseases among needle-women, tailors and printers; and Dr. Bristowe and Mr. Holmes submitted the important report on the mortality rates in general hospitals in the United Kingdom and in Ireland.

Housing of the Working Classes

At the 1801 Census, the population of England and Wales was 8,892,000 and the number of inhabited houses 1,575,000. By the 1841 Census the population had increased to 15,914,000 and the number of inhabited houses to 2,943,000; and, in 1871, these numbers had risen to 22,712,000 and 4,259,000. The practice, in full operation by 1911, of counting the number of rooms as well as the number of houses had not then been adopted, but from our knowledge of the kinds of houses built during this period it is justifiable to assume that the average number of rooms per house in 1801 did not differ materially from that in 1841 and 1871. From a calculation of the proportion of houses to population at the various periods, it becomes evident that, as the population increased, the building of accommodation for the people barely kept pace with their requirements. Professor Clapham², after carefully considering the Census returns of 1831, 1841 and 1851 expresses the view that "A general worsening is at least not demonstrable; nor do the more carefully taken returns of 1851, for which a house was exactly defined as 'an isolated dwelling or a dwelling separated by party walls,'

¹ Burdon-Sanderson, Sir John Scott (1828–1905). Was one of the most able of the research workers and investigators employed by Simon during his period of office. Burdon-Sanderson graduated in medicine at Edinburgh in 1851 and was Medical Officer of Health of Paddington from 1856 to 1867. Became a part-time inspector in the Medical Department under the Privy Council. Did researches on cattle plague, the inoculability of tubercle, the intimate pathology of contagion, infection and disinfection and the chemical products of putrefaction in relation to disinfection. Was appointed in 1860 physician to the Brompton Hospital for Consumption and to the Middlesex Hospital. Elected Fellow of the Royal Society in 1867. In 1871 became Professor of Physiology and Histology, University College, London, in succession to Sir Michael Foster. In 1882 he was appointed Waynflete Professor of Physiology at Oxford and from 1895 to 1903 was Regius Professor of Medicine at that University.

² Clapham, J. H., *An Economic History of Modern Britain—the Early Railway Age*, p. 547.

reveal a worsening on 1831, or, probably, on 1841.” The prevalent types of houses built by private enterprise for occupation by the working classes differed widely in the various localities. In the West Riding, including such towns as Leeds, Huddersfield, Bradford and Dewsbury, an excessively common type was the back-to-back house. Frequently these were built in rows with the privy and ashpit accommodation at the end of each row. There were, of course, no yards so that the drying of clothes presented difficulties which, in some cases, were overcome by stretching a clothes-line across the narrow street from the upper room of one house to that of the one opposite. In Liverpool and some of the other port towns a common method of building houses was to plan them in courts, on each side of which was a row of two to eight dwellings. The houses in the court faced each other at distances which varied in each type of court, being in the older ones as little as six feet, but in those built in the late 'fifties and in the 'sixties as much as fourteen feet. In the worst courts the entrance was through a passage about three feet wide covered by one of the street buildings and in this particularly unhealthy type, as well as in others, buildings at the other end formed it into a *cul de sac*. Under the Liverpool Sanitary Act, 1846, the building of narrow courts was forbidden, but the construction of houses in courts of width fourteen feet or over was still allowed. In Birmingham and other towns in the Midlands the houses were of equally poor structural quality, but of mixed types, including small groups of back-to-back houses and houses built in rows. The one common defect of all—or nearly all—houses built for the accommodation of the working classes during the first half of last century was their poor quality and their lack of adequate ventilation. Poor quality of building and design led to rapid dilapidation and to the difficulty, even in the case of good owners, in keeping houses in a satisfactory state of repair.

The Legislature, and even its advisers, awakened late to the knowledge that the quality of housing accommodation had a most marked influence upon the health of the people. The provision of houses was regarded, even into the twentieth century, as, *par excellence*, a matter for private enterprise with which the State, apart from laying down minimum standards of building, had little or nothing to do. For the general good of the community it was thought undesirable that nuisances of a gross kind should be permitted in connection with houses, and the Nuisances Removal and Diseases Prevention Acts gave to the local authorities adequate powers to deal with serious abuses; but the sanitary state of houses occupied by the working classes was excessively bad; there was

much overcrowding and a great deal of disrepair. Because it was in accordance with the *laissez faire* spirit of the times, there was little efficient housing legislation, and even this was administered by the local authorities in such a negligent fashion that it exerted little effect upon the general housing situation. There were two possible courses of action open to the Government at that period; to pass legislation providing for the demolition in each area of the grosser types of insanitary houses, leaving it to private enterprise to undertake re-building, or instead to encourage local authorities to construct accommodation for the working classes, charging either an economic rent or, alternatively, a rent artificially reduced by the aid of a subsidy. Some attempts were made by enlightened local authorities to apply these solutions of the housing problem but such efforts were of a minor character. The record of successive Governments in this period in regard to such an important factor in the health of the worker and his family was uniformly bad, and it was not until well into the next century that a really serious attempt was made by the State to improve housing conditions in this country.

It is indeed remarkable that during the first half of the nineteenth century Parliament should have been willing to devote so much of its attention to Factory legislation and to neglect to such an extent the equally or more important question of housing. But so it was, and the beginnings of Parliamentary interest in this subject spent themselves upon Lord Ashley's Common Lodging Houses Act and his Labouring Classes Lodging Houses Act of 1851.¹ The first named Act gave to local authorities power to register, inspect and supervise common lodging houses in their areas, and this means of control was useful, especially in times of epidemics, when these places, unregulated and overcrowded, had often served as breeding grounds for disease. This Act was amended in some of its details in 1853. The second measure gave power to local authorities to conduct lodging houses at their own expense. Apart from these two comparatively minor measures no legislation on the subject of housing was passed for fifteen years, until, in 1866, the Labouring Classes Dwelling Houses Act became law. This was an unimportant measure granting, on application, loans from the Exchequer to local authorities for the purpose of erecting labourers' dwellings in populous towns. But Torrens's Act, 1868, was really important

¹ Ashley became Earl of Shaftesbury in 1851. By a curious chance, therefore, he was able to carry these Bills through both Houses of Parliament and so regarded them as especially his. See J. L. and B. B. Hammond, *Lord Shaftesbury*, p. 164.

and it forms the starting point for all subsequent legislation on housing.¹ One principle underlying this Act was that it was the duty of the owner of a house to keep it in good repair. If he did not perform this elementary duty the local authority might, on the recommendation of the Medical Officer of Health, or on the application of four householders, close the house or repair it at the owner's expense. This was the modest beginning of the vast amount of legislation on housing which has reached the Statute Book during the past eighty years. Torrens's Act did very little more than establish two principles, one major and the other minor. The minor principle has been referred to above ; the major principle was that the State possessed both the power and the will to interfere with the sacred rights of property in the name of Public Health. It was only in 1848 that the first Public Health Act was passed, and the fact that Torrens's Act of 1868 went through all its stages in Parliament without more than the usual amount of opposition is a plain indication of the distance the country had travelled in the short space of twenty years. Adversity had been a good teacher. There had been cholera epidemics, riots in favour of cheap food, and starvation in Lancashire during the Cotton Famine. The care of the health of the people had become a subject of political importance, and the piloting of a Factory Bill or a Housing Bill through the House of Commons was now considered a worthy task for a senior Minister of the Crown. Disraeli, as a young man, had depicted in *Sybil* the "two nations" of which this country was composed—the one heir to all the opulence of a great people, the other downtrodden and oppressed in the slums of dark cities. The time was rapidly approaching when it would be necessary to re-double the effort to erase from the towns the evils created by the Industrial Revolution, and in this task the Public Health Service and the medical profession would take a prominent part.

Factory Legislation during the Period 1858-71

In the Introduction we brought the subject of factory legislation up to the date of the passing of the Factory Act, 1847. The principal gains accruing from the legislation, much of it abortive, passed up to and including that date had been the appointment of factory inspectors, a restriction of the hours of working, in a limited number of industries, of women, young persons and children, and the power to make regulations in regard to the fencing of machinery. This measure of progress had been secured in the

¹ Torrens, W. T. M. Artizans and Labourers Dwellings Act, 1868. This Act was amended in 1879 and 1882.

face of intense opposition, and it was at all times evident to Lord Shaftesbury and the other reformers that the further steps urgently needed to extend the protection of the law to the non-textile trades would be equally strenuously resisted. Simon, the Medical Officer of the Privy Council, had described the situation of the worker in its true colours in his illuminating reports of 1860, 1861 and 1862¹, and these damning documents, with their dreadful disclosures about the health of both industrial and domestic workers, exercised much influence upon the Government. In 1861 Lord Shaftesbury moved for a fresh inquiry to be made into the conditions of employment of children and young persons in trades not regulated by law. The Commission² thus appointed continued its survey for several years, from time to time issuing reports which left the country in no doubt as to the vast extent of the evil which had to be remedied. The first report, issued in 1863, was devoted to the manufactures of pottery, lucifer-matches, percussion-caps and cartridges, hosiery and lace and to the employments of paper-staining, "hooking and finishing" and fustian-cutting³. In the pottery trade it was found that in addition to long hours, the employment of children at an early age and insanitary conditions, there were special dangers to health owing to the presence of lead in the glaze and to the high temperatures at which some of the processes were carried out. There was also the danger to the lungs from dust, more particularly in the operation of scouring. In the match industry the risks attendant upon the use of phosphorus were, by then, well known; and in the percussion-cap and cartridge industry there was the frequent possibility of explosions from which many of the operatives—mainly women and children—lost their lives or were badly injured. Fustian-cutting, largely a home industry, was not dangerous, but it involved excessively long hours of work to men, women and children alike.

The efforts of Shaftesbury's Children's Employment Commission resulted in the passing of the Factory Act, 1864, which placed the industries referred to above under the provisions of the Factory Acts already in operation. Further investigations by the Commission showed the extent to which the current evils in industry applied not only to factories, but to small workplaces, without steam power, where few operatives were employed, and to dwelling-houses

¹ See pp. 89–93. The investigations on which these reports were based were made by Dr. E. H. Greenhow.

² The Children's Employment Commission, 1861. There were previous ones in 1833 and 1840.

³ Hutchins, B. L., and Harrison, A., *A History of Factory Legislation*, p. 150.

employing, in the main, a single family. One of the objections to attempting to extend the protection of the Factory Acts to the workplace and the dwelling-house was the difficulty of inspection; but it was evident that industry in these places was as much in need of regulation as in the factory. "Thus we see public opinion driven forward, reluctantly perhaps, and slowly, but with irresistible force, towards the principle of collective control of all workers."¹ The introduction by Mr. Walpole on March 1, 1867, of a Factory Acts Extension Bill and, with it, an Hours of Labour Regulation Bill created no excitement in the country and little opposition to the principle in the House of Commons. The Factory Act, 1867, made no changes in the law already in force in connection with the textile industry, or with the Act of 1864 which had brought a number of other occupations under the supervision of the factory inspectors. What it did was to bring under regulation a large number of new industries including blast furnaces, copper mills, iron foundries, copper and brass foundries and, in general, any premises in which fifty or more persons were employed in any manufacturing process. There were, however, a large number of exceptions incorporated in the Act, and this fact reduced its value considerably.

The Workshops Regulation Act, 1867, applied to any establishment in which fewer than fifty persons were engaged in any manufacturing process.

Relief of Destitution

In the Introduction some account is given of the development of the Poor Law, from the administrative point of view, during the twenty-five years following the passage into law of the Poor Law Amendment Act, 1834. The steps taken during that period were: the building of workhouses, the better classification of inmates, the beginnings of medical treatment in institutions, the organisation of a system of district medical officers for the domiciliary medical care of the indigent poor, and the development of a policy in regard to the maintenance and education of children. During the period from 1858 to 1871, with which we are now dealing, continuous progress was made on the lines laid down by the Poor Law Commissioners of 1832 in their report. Mistakes, however, were made in relation to workhouse policy, which developed in the direction of the mixed institution instead of, as the Poor Law Commissioners intended, separate institutions for different purposes. "If their [the Commissioners'] principle of classification by institutions had been carried

¹ Hutchins, B. L., and Harrison, A., *A History of Factory Legislation*, p. 165.

out, we should have been spared many of our present problems, and above all the problem of finding that in the large towns the workhouse is no longer deterrent, but is actually attractive to many of the able-bodied.”¹

Attempts were made to rectify this mistake in the case of children who had been, up to 1834, the most neglected class under the Poor Law. According to Chadwick, not one third of the Poor Law children found any respectable employment. The Poor Law Commissioners in 1838 emphasised the importance of a drastic change in the methods adopted for the care of children, pointed out the dangers to character and morals of a workhouse upbringing, and remarked that, “Those who have ascertained the early history of persons who, in a greater or less degree, have offended against the laws, have found that a large proportion of these have passed their infancy and youth in the workhouse, and can trace the formation of the habits which have led them to the commission of crime to the entire want of moral training in these institutions.”² It was evident that the first step to be taken was the classification of the children in workhouses in such a way that they could be kept entirely separate from the adults, and it was found necessary to improve workhouse schools. The Commission of 1909 say that a few of these schools provided an education “beyond all comparison better than was within the reach of the children of labourers in any part of the country.”³ This was, however, exceptional, and the great majority of workhouse schools were of a low standard, due to the difficulty of obtaining teachers. A number of district schools were started in some of the larger towns, each taking children from several institutions. A series of experiments was made in different parts of the country to try to ascertain the most satisfactory method of bringing up Poor Law children outside the workhouse, and “scattered homes,” “cottage homes” and the system of boarding-out were all tried. All these methods were successful in varying degrees and they became extensively used as the years went by.

One of the important developments which took place during this period was the extended use of Poor Law Institutions for the in-patient treatment of the sick. An inquiry into the conditions in the infirmaries and sick wards of the workhouses in London, conducted at the instance of the Poor Law Board in 1865 and 1866, showed that the facilities in these institutions for medical treatment

¹ Report of the Royal Commission on the Poor Laws, 1909, p. 131.

² Fourth Annual Report, Poor Law Commissioners, 1838, p. 60.

³ Report of the Royal Commission on the Poor Laws, 1909, p. 180.

left much to be desired. The report showed that the sick wards were badly constructed, imperfectly ventilated and frequently insanitary; and that the beds were insufficient and, being filled with flock, were generally in a lumpy condition; that the eating and drinking vessels were in many instances unclean; . . . that, generally speaking, the food for the patients was cooked (often badly) by paupers, and was frequently served nearly cold; . . . and that the patients, frequently during the day and almost entirely during the night, were nursed by paupers, many of whom could neither read nor write, whose love of drink often drove them to rob the sick of the stimulants which they should have given them, and whose treatment of the poor was generally speaking, characterised neither by judgement nor by gentleness.¹

This was a serious indictment, but a somewhat similar criticism could, with justice, have been made about many of the hospitals in England at that time. The report had the effect of stimulating action by Parliament and the Metropolitan Poor Act, 1867², applying to London only, was passed. This Act had, as one of its objects, the provision, either by building or by allocation, of separate infirmaries for the non-infectious sick; and its policy, steadily continued, secured for the inhabitants of London a number of hospitals—still Poor Law establishments—which were fully up to the standards of the medical requirements of that age and supplied with “all reasonable and proper appliances for the treatment of diseases of every kind.” The example set by London was extended by the Central Authority to the provinces where separate infirmaries were established in most of the populous areas. Not only, however, were the buildings in which the treatment of the sick was carried on made suitable for the purpose but, both in London and in the provinces, higher standards of staffing were brought into operation. Infirmaries were placed under a resident medical superintendent with a staff of doctors to assist him and the staffs of nurses were augmented.

An improvement in the qualifications of nurses was one of the most important of the steps taken to raise the standard of hospital care at that time. As far as the Poor Law Institutions were concerned the excessively poor quality of the nurses employed had been for many years a standing reproach not only to the Boards of Guardians but also, in equal measure, to the Central Authority. “Prior to 1865 the indoor poor were chiefly nursed by paupers

¹ Report of the Royal Commission on the Poor Laws, 1909, p. 239.

² The main effect of the Metropolitan Poor Act, 1867, was the establishment of the Metropolitan Asylums Board.

who . . . were often illiterate, drunken and altogether unsuited for such work.”¹ The action taken by the Poor Law Board was to recommend to the Boards of Guardians the appointment of a sufficient number of paid nurses and the discontinuance of the practice of employing pauper inmates as assistant nurses. In London a beginning was made of the system of training probationer nurses to the end that each separate infirmary should in the course of time be able to supply its own trained nursing staff.

In the provinces a beginning had been made in regard to the provision of skilled nursing by the appointment in 1861 of Miss Agnes Jones as the superintendent of nurses at the Brownlow Hill Institution in Liverpool. Miss Jones, who had been trained under the auspices of Florence Nightingale at St. Thomas’s Hospital, was the first with that qualification to accept an appointment at a workhouse infirmary and to initiate courses of training for the nursing staff. The London arrangements for the training of nurses in Poor Law infirmaries owed much to this example.

One of the classifications which had from time immemorial created difficulties for the Central Authorities and the parishes was the able-bodied pauper who, when confronted with the alternatives of hard work for an employer or a light job with the parish, often chose the latter. One of the problems was to decide, in any particular case, whether the man could not find work or was merely unwilling to work and, without ascending into the realms of metaphysics, it often seemed impossible to find the answer. This difficulty had existed since the time of Queen Elizabeth, but it was long before it was recognised that poverty was not necessarily due to the faults or wrong-doing of the poor ; as Trevelyan puts it, “ gradually the distinction between the able-bodied who would not work, the aged and feeble who could not work, and the unfortunate who could not find work, became clear to Tudor society and took its place in the Poor Law.”²

What statecraft did not realise during this part of the nineteenth century was that industry and society were making too large demands upon the physical energies of the labouring classes, and that the refusal to work which the Poor Law Commissioners deplored was the revolt of the individual against hard, soul-destroying and long-continued labour. The “ workhouse test ” confronted the labourer with the inhuman alternatives of working long hours in an insanitary and possibly dangerous occupation or of being separated from his family ; and, the claims of natural affection

¹ Report of the Royal Commission on the Poor Laws, 1909, p. 240.

² Trevelyan, G. M., *History of England*, p. 284.

being what they are, he usually chose the former. But the State was compelled to protect itself against the idle and lazy and various expedients were tried, including the "modified workhouse test" in which the man went into an institution and the family received out-relief, the method of the "labour-yard," farms and farm colonies, and assisted schemes of emigration.

The Sanitary Act, 1866

Up to the time when this Act was passed both the Privy Council, as the central Authority, and the local authorities, as the executants of policy at the periphery, had been working under powers conferred by the various Nuisances Removal and Diseases Prevention Acts and the Public Health Act of 1848. The first Act in regard to the suppression of nuisances was the Nuisances Removal and Diseases Prevention Act, 1846, which was of a temporary character, but was made permanent by the Nuisances Removal and Diseases Prevention Act of 1848. Shortly after the cholera outbreak of 1854 Parliament in 1855 passed two Acts which were designed to strengthen the hands of the General Board of Health in the event of a further epidemic. Under the Diseases Prevention Act, 1855, the Privy Council was authorised to declare the Act in force in any part of England affected by or threatened with any formidable epidemic of contagious disease, and thereupon the General Board of Health were empowered to issue regulations for the interment of the dead, house to house visitation, the dispensing of medicines and other matters of a similar kind. The Nuisances Removal Act, 1855, consolidated the Nuisances Removal and Diseases Prevention Acts of 1846 and 1848, enlarged the definition of nuisances and dealt with the pollution of streams by gas washings, with the exposure for sale for human food of unsound meat, and with offensive trades.

Acts to amend the Nuisances Removal Act, 1855, were passed in 1860 and in 1863¹. The 1860 Act made provision for restoring the Guardians as the local authority for the execution of the Act in place of the committee appointed by the Vestry under the Act of 1855; and the 1863 Nuisances Removal Act dealt entirely with the seizure and destruction of unsound meat exposed for sale for human food. By the year 1864 this legislation was regarded by Simon and his colleagues as out of date. The practical administration of sanitary laws over a period of nearly twenty years had disclosed many evils which were not covered by existing legislation, or in respect of which powers already available were not being properly

¹ 23 & 24 Vict. cap. 77 and 26 & 27 Vict. cap. 75.

used owing to neglect or collusion on the part of local authorities and their officials. Simon mentions some of the worst sanitary evils, such as overcrowding and foul water-supplies, which were not within the reach of the Nuisances Removal Act; but he also refers to filth-nuisances on a monstrous scale continuing under the eyes and noses of authorities appointed to remove them, so that filth-diseases "of a cruel and scandalous amount were being inflicted on helpless myriads of populations."¹

It is true that, in spite of sanitary legislation, the poorer people of this country were suffering from evils the magnitude of which it is hardly possible, at this distance of time, to estimate. Housing was excessively bad and overcrowding the rule and seldom the exception; real wages were low and grinding poverty the constant accompaniment of the lives of the workers, dogging their footsteps ceaselessly and remorselessly from the cradle to the grave. Perhaps one of the worse of all the evils from which the labouring population of this country suffered during that period was that of industrial disease. Owing to overcrowding and lack of ventilation in factories tuberculosis of the lungs was widespread; reasonable care was not taken to remove from the atmosphere the dust which industrial processes generated and, as a result, fibrotic disease of the lungs was frequent; poisonous products, especially in the smaller industries, took their toll of the lives and health of the workers; and, even on the sea, sailors making the longer voyages were still to be found suffering severely from scurvy because their employers had neglected the dietary regulations of the Merchant Seamen's Act.

These were the arguments which induced Parliament to confer further powers on the Privy Council and the local authorities by passing the Sanitary Act, 1866; and their weight and cogency were strengthened by the *Specialised Mortuary Statistics*, containing information about causes and ages of deaths in each place and class which, at Simon's request, had been compiled by the Registrar-General. Simon was highly satisfied with the Act, in the drafting of which he had had a considerable share, but he realised the administrative weakness of some of the local authorities which would have to put it into operation. Mr. Bruce's Bill, at one stage, appeared likely to be lost, as one of the frequent changes of Government occurred at that time, Lord John Russell's administration giving place to that of the Earl of Derby; but "just then happened to come a moment of popular piety towards the cause of sanitary reform," because Asiatic cholera appeared in London, "and this

¹ Simon, J., *English Sanitary Institutions*, p. 296.

ill wind . . . blew very favourably to fill our sails." So the Bill passed into law. It was by far the best drafted, so far, of the Acts of its kind, and in it "the grammar of common sanitary legislation acquired the novel virtue of an imperative mood."¹ It became the *duty* of local authorities to inspect their districts and to suppress such nuisances as might be found; and provision was made against the inaction of local authorities in cases where sewers were not constructed, or water supplied, or nuisances removed, that the Secretary of State and the Court of Queen's Bench should be able to enforce the neglected duty. This was undoubtedly sanitary legislation with teeth in it.

The Sanitary Act, 1866, had, as well, a number of detailed provisions. The first part amended the Sewage Utilization Act of 1865, enabling Vestries to form special drainage districts, and making better provision for house drainage and the supply of water; the second part amended the Nuisances Removal Acts, including overcrowding and the non-consumption of smoke by factory furnaces and chimneys in the category of nuisances, facilitating proceedings against nuisances and making a number of provisions in regard to disinfection and persons suffering from infectious disease.

Before the end of the period of government of the Public Health Service by the Privy Council there were two minor Sanitary Acts passed which added somewhat to the powers conferred by the important Act of 1866. The Sanitary Act, 1868, enlarged the powers of sewer authorities in relation to house drainage, privy accommodation and the removal of house refuse; and the Sanitary Act, 1870, provided for the service of notices in special drainage districts.

It will be seen that the legislation, briefly described in the foregoing paragraphs, taken in conjunction with the Public Health Act, 1848, and various Sewage Utilization Acts, already amounted to a comprehensive sanitary code. During the years prior to 1871 there had been shown a marked tendency to separate, in Acts of Parliament, "Diseases Prevention," which dealt with the steps to be taken to combat infectious diseases, and "Nuisances Removal" which was concerned with sanitation. The time had not yet come, although it was rapidly approaching, when every aspect of sanitation and the prevention of disease, including sewage schemes and water supplies, would be built into one comprehensive Act of Parliament which would remain in force, substantially unamended, for as long a period as sixty years. Events were preparing the way for the

¹ Simon, J., *English Sanitary Institutions*, pp. 298-9.

passage of the great Public Health Act of 1875, but the time when it was to be drafted and introduced into Parliament would depend upon the favourable combinations of political forces.

The year 1870 is noteworthy for an attempt by the Medical Department to obtain from Parliament some amendments to the Medical Act, 1858. The Medical Act had been in operation long enough to show that it had a number of serious defects. It did not enable the public to discriminate between those who were medically qualified and those who were not, and it failed to ensure that the standards of training and examination required for a minimum qualification were such as to render its possessor fit to undertake general practice. Owing to the defective drafting of the Act it was still possible for a man to undertake any kind of medical practice, including the holding of public appointments, without possessing a qualification in both medicine and surgery. There was, in addition, the grave suspicion that all was not right with the system of examinations held by the universities and the licensing bodies. A Bill was, in April, 1870, introduced in the House of Lords by Lord de Grey, but a number of difficulties were experienced during the Session when the Bill was being discussed in the House of Commons and, in the end, it failed to pass. Such an event was highly unfortunate as this was the last serious chance for the amendment of the Medical Act for many years, and it was not until 1886 that Parliament could be persuaded to make the necessary changes in the organisation of the profession.

In 1871 two events, closely connected with each other occurred during the earlier months of the year before the important administrative changes which resulted in the formation of a new Government Department took place. The first of these was the appointment of a Select Committee to consider the administration of the Vaccination Acts, under the chairmanship of Mr. Forster. The second event was a serious outbreak of smallpox, which tested very fully the administrative arrangements, resting on the foundation of the Vaccination Acts, which had been slowly developing for more than thirty years. As regards the Select Committee, its report fully vindicated the system of vaccination then in force in the country, and it made recommendations in regard to the appointment of vaccination officers and other matters which were included in the Vaccination Act, 1871, passed in that session of Parliament.

During the epidemic of smallpox commencing at the end of 1870 (pp. 169–172) the services of the vaccination officers were fully used, and under the energetic direction of the Central Department hospitals of an emergency character were opened in many parts of the country.

PART II

THE RISE AND DEVELOPMENT OF ENVIRONMENTAL HYGIENE, 1871-1900

The period in the history of Public Health dealt with in Part II of this book extends from 1871, the year of the establishment of the Local Government Board, to the end of the century. In the legislative sphere this period is noteworthy for the passing of the Public Health Act, 1875, and the Housing Act, 1890; but its special importance arises from the fact that it was a time during which progress in the provision of a sanitary environment in the towns of this country, after the many false starts of the preceding twenty years, began to accelerate surely and steadily. It was in this period that the great services which enable human beings to live in closely packed communities became fully developed. Abundant water supplies were brought to the towns, often over great distances, sewers and drains were installed and a relatively high standard of municipal cleanliness, by gradual stages, secured. Success in these undertakings denoted efficient administration by the Local Government Board and the majority of the local authorities.

During the last quarter of the century discoveries of exceptional importance were made in the new science of bacteriology, leading to greater advances in the understanding of disease than ever before in the history of mankind. These discoveries led to a new outlook in regard to Public Health. Some account is given in this part of the book of a number of interesting epidemics which occurred during the period. The outbreaks referred to are, of course, only samples picked out of many epidemics which were reported. All of any importance were carefully investigated by Medical Inspectors of the Local Government Board, and the knowledge thus acquired laid the foundations of our modern knowledge of epidemiology.

An account is also given of the social and industrial circumstances obtaining in the urban areas of this country during the last quarter of the century. It is noted that the population was steadily increasing and that during the 'nineties the standard of real wages began to show signs of a rapid rise. A rise in the standard of living at that time is regarded as of great significance as a factor of outstanding importance in improving the health of the people. This part of the book ends with a section dealing with voluntary effort. Some of the more important of the voluntary societies which arose in the nineteenth century are mentioned, and the histories and development of those more immediately concerned with medicine and Public Health are dealt with in some detail.

CHAPTER 1

THE GREAT PUBLIC HEALTH ACT, 1875

We are now approaching the stage in the history of Public Health when great developments, to which all the events recounted in the preceding chapters were leading, were due to take place. It has been shown that the Public Health system arose, almost fortuitously, out of the appointment of a Commission in the year 1832 which had, as its terms of reference, the duty of inquiring into the administration of the Poor Law. The Poor Law Commission could hardly fail to recognise, during the course of its prolonged and exhaustive investigations in every nook and cranny of the kingdom into the many-sided problems of poverty and destitution, that the solution of many of these problems was impossible without a drastic improvement in the health of the people—that, in fact, poverty and destitution were, in part, within the domain of Public Health. The consequences of the appointment of this Commission were, therefore, two-fold; it fulfilled its official functions and the Poor Law Amendment Act of 1834 found its way to the Statute Book, and then, continuing as a permanent body, it produced the Report on the Sanitary Condition of the Labouring Population of Great Britain which led to the passage of the Public Health Act, 1848, and the founding of the Public Health Service.¹ Two bodies deriving from the Poor Law Commission directed the Poor Law system on the one hand and the Public Health Service on the other until, in 1871, they coalesced under the ægis of the Local Government Board. The one body was the Poor Law Board deriving from the Poor Law Commission and founded in 1847; the other was the Medical Department which served under the General Board of Health and the Privy Council.

¹ The sequence of events, it will be remembered, was as follows:—Appointment of a Commission of Inquiry into the working of the Poor Laws, 1832; Report of the Commission, 1834; Poor Law Amendment Act, 1834; arising out of the Act the appointment of a permanent Poor Law Commission, 1834; inquiries by the Poor Law Commission (through Drs. Arnott, Kay and Southwood Smith) into the prevalence and causation of preventable sickness in the Metropolis, 1838; inquiry extended to the whole of England and Wales, 1839; publication of the famous Report on the Sanitary Condition of the Labouring Population of Great Britain, 1842; Royal Commission on the Health of Towns, presided over by the Duke of Buccleuch, 1843; Reports of the Royal Commission published in June, 1844, and February, 1845; Public Health Act, 1848.

Some of the difficulties which the Public Health Service experienced under its different forms of government between the years 1848 and 1871 have already been described. It suffered from uncertainty, from sudden changes of policy, and from the political weakness of all organs of government which are exposed to Parliamentary criticism outside the protecting arm of a strong Minister. Under the Privy Council this weakness was accentuated. The Medical Department was merely one of the numerous affairs and departments for which the Privy Council was responsible. But the Privy Council's responsibility was not that of a Minister but rather that of a committee, and this was a grave disadvantage when criticism was encountered in the House of Commons. The spokesman of the Government who replied did not possess that profound and intimate knowledge of the Department which only comes of being immersed day by day in its affairs. A number of useful Bills promoted by the Department failed to survive discussion in the House of Commons and this was an unfortunate circumstance in the case of a Service which urgently needed rapid development. None of this was the fault of Simon, who did wonderful work with the scanty resources at his disposal, who succeeded against impossible odds in creating a code of sanitary legislation and who had produced a series of reports which had exposed to the country the full extent of the Public Health evils from which it was suffering. One of these evils, for which the Legislature was largely responsible, was the chaotic multiplicity of local authorities which every new Act of Parliament seemed to increase.

The appointment of a Royal Commission to survey the sanitary administration of the country was overdue; but it was owing to the influence of a member of the medical profession, Mr. H. W. Rumsey, of Cheltenham, through the British Medical Association and the Social Science Association, that Mr. Disraeli¹, the Prime Minister, agreed in 1868 to make inquiry in this way. But the usual misfortune which had so often retarded sanitary progress in the past, threatened these proceedings, for a change of government almost immediately occurred and Mr. Gladstone became Prime Minister. A Royal Warrant for the appointment of a Commission was, however, issued in 1869 by the new Government, and it covered an inquiry into the sanitary circumstances of England and Wales (excluding the Metropolis) and into central as well as local

¹ Disraeli was the author of perhaps the most famous of all sayings about Public Health :—"The health of the people is really the foundation upon which all their happiness and all their powers as a State depend." In *Sybil* there is the remark "The Youth of a Nation are the trustees of Posterity."

organisation. It is gathered from Simon's writings that he held definite views as to the kind of central and local organisation which would be necessary in order to obtain an efficient Public Health Service. This organisation would have to provide three things :—(i) A strong Central Authority, administered as a permanent Government Department, under the control of a Minister, (ii) a system of local authorities, each responsible for the whole of the Public Health and sanitary services in its area, and (iii) an Act of Parliament consolidating all that experience had shown to be most useful in the mass of legislation already passed on these subjects. The Report of the Royal Commission of 1869–71 dealt practically and sensibly with all these requirements, recommending, as an essential step, the consolidating of sanitary legislation. Regarding the Central Authority the Report recommended that its functions should be supervisory, appropriate local authorities carrying out administration, and that these authorities, in places without special organs of local government, should be the Boards of Guardians. It also made the important recommendation that Poor Law and Public Health should be presided over by one Minister; and it proposed that when the new Department was formed all Public Health and sanitary duties exercised by various organs of Government such as the Privy Council, the Local Government Act Office, and the Registrar-General's Office, should be transferred to it. There were, in addition to these principal recommendations, a number of less important proposals which were, nevertheless, of great interest. The office of Medical Officer was to be continued; there was to be a fully organised Inspectorate, both medical and engineering; there should be Medical Officers of Health in all areas; action by local Health Authorities should be secured by penalties on default; and it should be made the duty of the Registrar-General to register disease and sickness or specified cases of disease and sickness. An interesting suggestion of the Commission was that it was desirable that the Central Authority should, with the consent of the managers, inspect hospitals and dispensaries supported by voluntary contributions.

While the reforms recommended by this Royal Commission were of a most varied character and destined to exercise a profound effect upon the future development of the Public Health Service, they were limited by the terms of reference to central and local organisation, and the latter was still further limited by the exclusion of London. Most important of all, the Commission was not able to make any recommendations in regard to measures for the protection of the health of that large part of the population which worked in factories.

The Report of the Royal Commission was accepted in full by the Government, and three important legislative steps arose out of it—the Local Government Board Act, 1871¹, the Public Health Act, 1872,² and the great Public Health Act of 1875.³ As regards the first named of this trinity of Acts of Parliament its effect was to establish a new Government Department—the Local Government Board—to which were transferred all the powers and duties of the Poor Law Board and the powers and duties of the Privy Council and Home Office in relation to Public Health and sanitary legislation. Thus the Poor Law and Public Health came together again. Next came the turn of the local authorities, and an attempt was made in the Public Health Act, 1872, to simplify them by mapping out all the districts in England (exclusive of the Metropolis) and placing each under one defined authority, responsible for the task of exercising all the powers and duties under the Sanitary Acts in its area. The Local Government Board was also empowered to constitute sanitary authorities of ports, either by making one riparian authority the sanitary authority for the whole port, or by uniting two or more riparian authorities.

It need hardly be emphasised that the creation of the Local Government Board was the most important event, up to that period, in the history of Public Health and, indeed, the modern development of the Service may be said to date from this time. No longer was the Public Health Service to be the poor relation of all the organs of Government, existing on the sufferance of the older Departments and thankful to borrow a Minister whenever it needed to present a Bill to Parliament. Now it would possess its own proper status, its Minister, interested in its work and responsible for its fate, its secretaries and accountants and all the apparatus of system, precedent and tradition that constitutes the soul of a fully-formed Government Department. At the outset the Local Government Board, constituted in August, 1871, possessed only the staff of the Poor Law Board together with the Medical Department under its Medical Officer, John Simon, who became the Medical Officer of the new Department. The Local Government Board was being launched on a perilous sea which had already engulfed its Public Health predecessors. But it possessed certain advantages. The first of these was the unanimous Report of the Royal Commission which clearly marked out the path which the new Department should follow, at least for the first few years. Mr. Gladstone's

¹ 34 & 35 Vict. cap. 70.

² 35 & 36 Vict. cap. 79.

³ 38 & 39 Vict. cap. 55.

Government had accepted the policy of appointing a Royal Commission, and the one benefit resulting from the change in political power in the House of Commons in 1868 (p. 115) was that Mr. Disraeli and his Opposition party approved of this policy also. In these circumstances the Board had the full assurance that legislation which was in principle within the four walls of the Royal Commission's Report would be implemented by Parliament without undue difficulty. Then, again, the attitude of the country towards social legislation had been gradually changing and it was no longer necessary, as it had been during the earlier part of the campaign for both Public Health and Factory Acts, to struggle for every inch of progress. *Laissez faire* as a political policy had shown itself to be not without defects when measured against the urgent needs of the people. Moreover, political power was tending to move towards the left and Gladstone depended more and more upon John Bright, who was anxious to enfranchise the lower-middle classes, for his Parliamentary majority. Whether introduced by Gladstone or Disraeli, the country was determined on a further extension of the franchise, and in 1866 and 1867 it was only a question as to which party should gain the credit for the inevitable reform. In 1867 Disraeli succeeded in passing through Parliament a measure which granted household suffrage in the boroughs but not in the counties. From the Reform Act, 1867, flowed the Education Act, 1870, which established universal and compulsory education, and it was one of the influences which made possible the passage of the Public Health Act, 1875, and further legislation in regard to housing and to factories. There were, however, disadvantages to the Public Health Service in its enforced association with the Poor Law under the Local Government Board, and it remained to be seen whether the new Department would be governed by the spirit of the Poor Law Board or not. Chadwick's influence had continued to pervade the work of that body and by the year 1871, when it was taken over by the Local Government Board, it had built up an efficient organisation of inspectors, through the medium of which its relations with the Boards of Guardians were maintained. The Poor Law Board had centralised administration to a much greater extent than had the General Board of Health or the Medical Department under the Privy Council and, being organised on the customary lines of a Government Office, it appeared likely that its point of view would largely determine the policy of the Local Government Board when the amalgamation took place. Simon criticised the past policy of the Poor Law Board because, even in relation to medical matters such as workhouse

infirmaries and vaccination, it had relied too much on lay inspectors ; and he was afraid that, under the Local Government Board, this practice might in time be adopted on the Public Health side.

A strong Medical Department at the Local Government Board could have been of great assistance to the Poor Law side of the work, which was developing year by year more responsibility for hospitals and other medical services. But the layman's jealousy of the medical administrator stood in the way and during the years between 1871 and 1876 the Medical Branch at the Local Government Board continued, if anything, to lose ground, becoming more and more subject to the secretarial side. Simon resigned his appointment as Medical Officer to the Board in 1876, being dissatisfied with the scope which he and his Branch were afforded in the determination of Public Health policy. He had been in the service of the Crown for twenty-one years, having been successively Medical Officer to the General Board of Health (1855-58), to the Privy Council (1858-71) and to the Local Government Board (1871-76). Looking at this subject across the space of the intervening years, it seems to us now unfortunate that the influence of the medical administrator was unable to make itself felt to a sufficient extent during the earlier, and formative, years of the Local Government Board. Lacking medical guidance, the Board had no consistent policy in regard to the development of the Poor Law Infirmaries which, by the end of the century, were undertaking a large proportion of the total hospital treatment not only of the destitute but also of the working classes of this country. Because there was no carefully considered medical policy, workhouse infirmaries were kept poorly equipped and badly staffed, especially on the consultant side, with the result that their medical work was often inefficiently performed and only in rare cases was it up to the standards of the best voluntary hospitals. Whereas, during the second half of the century, the voluntary hospitals of the better type made remarkable progress in the practical use of the knowledge gained by the medical research for which they themselves were mainly responsible, the Poor Law Infirmaries, potentially capable of attaining equal efficiency, lagged behind, seldom reaching anything beyond mediocre standards.

The Passing of the Public Health Act, 1875

The last step necessary to implement the main recommendations of the Royal Commission of 1869-71 was the consolidating of the law relating to sanitation and Public Health. Mr. Sclater-Booth, who had become President of the Local Government Board in 1874,

accordingly introduced in the following year a comprehensive Bill which included in its scope the law relating to very numerous matters such as local government areas, sewerage and drainage, nuisances, offensive trades, unsound food, infectious diseases, hospitals, the prevention of epidemics, highways and streets, markets and slaughter-houses, the purchase of land, the making of by-laws, Local Government Board inquiries, etc. The detailed provisions of the Public Health Act, 1875, are very wide and it consists of as many as 343 sections and 5 schedules.¹

Thus the Public Health Act, 1875, covered the whole of the legislative needs in the field of sanitation of the age in which it was passed. More than that, this Act exhibited as the years went by a quality of permanence which had been significantly wanting in Public Health legislation since 1848. No doubt the fact that Sir John Simon, during his last two years in the service of the Crown, had taken a considerable share in the preparation of the Bill endowed its provisions with lasting qualities which were to prove of great value to the cause of Public Health for a period of over sixty years. Simon had spent the greater part of his professional life in meditating deeply upon the principles which underlie the measures necessary for the preservation of the health of the community and of each individual within it. In the favourable political atmosphere which followed the report of the Royal Commission of 1869-71, Simon's views on the legislative needs of the Public Health Service were largely accepted, even by the administrators with whom he was so often at variance, and this important Act gained much in consequence.

Reference will be made in a later chapter in this book to the accelerated progress in sanitation, the inspection of food and the provision of copious and wholesome water supplies, which were such prominent features in the social history of this country during the last quarter of the nineteenth century. Much of the progress recorded during this period stands to the credit of the legislators whose political sagacity devised such a far-reaching measure as the Public Health Act of 1875. It was used by the Local Government Board for over forty years, and it served the purposes of the Ministry of Health for many years after; generations of officials in central and local government have spent their lives serving under the guidance of this model enactment. All the cities and towns in this country have become places fit to live in under provisions contained somewhere in this Public Health Act.

¹ It may be noted that the successor to this Act, the Public Health Act, 1936, which covers a much wider field, contains 347 sections and 3 schedules.

The Office of Medical Officer of Health

It will be remembered that the Royal Commission recommended that there should be one authority exercising all sanitary functions in each area and that there should be appointed Medical Officers of Health in every part of the country. The Act of 1871 made the appointment of Medical Officers of Health permissive, but in 1872 the President of the Local Government Board, Mr. Stansfeld, made this appointment nominally compulsory in the Public Health Act of that year. There were, however, at that time differences of views as to the mode of appointment. As far as the larger towns were concerned a Medical Officer of Health could be readily appointed and some of these areas had taken such action already either under local powers (as in the case of Liverpool and the City of London) or under the Public Health Act, 1848. The difficulty was with the smaller rural areas where there was not sufficient population to justify an appointment of this kind on a full-time basis. In general this particular aspect of the problem was solved by appointing a Medical Officer to serve two or more of such areas. No special qualifications or experience could be laid down in respect of these offices except that they should be held by qualified medical practitioners.¹ To Simon's chagrin, the negotiations between the Board and the local authorities, after the passing of the Public Health Act, 1872, were conducted by the inspectors and not by the Medical Branch, and many of the appointments finally made were from the ranks of the Poor Law medical officers.

The duty of the Medical Officer of Health was to be the adviser and executive officer of his local authority in connection with epidemics of infectious diseases and with sanitation, and it was his responsibility to report to his authority any influences which were acting in a deleterious manner on the health of the community which he served. Simon, rather appropriately, describes this office as one "for the redress of wrongs," and he emphasises again and again its responsible nature and the qualities of heart and mind which must be possessed by the holder of it.

It was from the beginning the Medical Officer of Health's duty to ensure that the worker was more and more able "to exact his sanitary rights." The early Medical Officers of Health appointed in 1847, 1848, and in the years which followed had, in spite of the scope of their duties which was forever widening, very little staff to assist them, so that for a long period their power to assist the poorer members of the community was restricted by the ordinary

¹ Power to grant the registrable Diploma in Public Health (D.P.H.) was given in the Medical Act, 1886.

limitations of time and space. Means of locomotion, at best poor according to modern standards, were sometimes not supplied by the local authority. One of them writes in 1851 that he had used his own gig, horse and groom on official business for a period of two and a half years at an estimated cost to himself of £95 per annum. The same Medical Officer of Health complained to the Town Clerk that he had paid out of his own pocket during the course of six months £20 for assistance at the office, and had employed his own servant as a messenger, neither clerk nor messenger being allowed by the Committee. "It is not my intention, however," he said, "to continue this arrangement."

An acute observer of the local government scene, writing in 1858 about the principles which underlay one of the Sanitary Acts, said of it: "The scope of the Act was so to deal with private rights as to make them subordinate to the public welfare. Thus, as the inhabiting of cellars unsuited for dwellings produced great mortality, their use was forbidden—as evil had resulted from houses being built without proper regard to light, ventilation or the decencies of life, regulations were established for enforcing attention to these requisites; summary power was given to justices to suppress nuisances certified by the Medical Officer as injurious to health; lodging houses were placed under control—narrow courts were prohibited."¹

That is a statement of the main duties of a Medical Officer of Health in the earlier years of the sanitary movement, and the passing of the Public Health Act, 1875, although it added to the amount of detail which this officer had to administer did not, except to a small extent, change the principles on which he was working. The Medical Officer of Health of 1875, with his colleague the Inspector of Nuisances, was still a sanitarian concerned almost exclusively with the environment in which people lived. It was not until the early years of the twentieth century that the main interest of the Medical Officer of Health turned towards Personal Hygiene.

There are, nevertheless, two exceptions to the general statement made above, and these relate to food inspection and infectious diseases. The comparatively minor duties in regard to food inspection contained in the earlier sanitary legislation were enlarged and systematised by the Public Health Act, 1875; and from then onwards Medical Officers of Health began to take an increasing interest in this subject. Infectious diseases had from the commencement of the office been a primary responsibility of the Medical

¹ McGowen, W. T., in a paper read to the Public Health Section of the National Association for the Promotion of Social Science, October, 1858.

Officer of Health. For many years, however, his weapon against infectious diseases had been principally sanitation until, under the Public Health Act, 1875, the general power to build fever hospitals became available, and the Medical Officer of Health's interest in this subject began to turn towards the clinical side of these diseases. The preventive aspect of the principal of these infections—typhoid, dysentery and typhus—nevertheless still included sanitation.

Although the Public Health Acts of 1872 and 1875 prescribed the appointment of full-time or part-time Medical Officers of Health in all areas, these Acts themselves did not lay down any particular duties to be performed by the occupants of the office. Advice as to what this officer should do in particular circumstances was given from time to time in reports of the Medical Officer of the Local Government Board.

After the passage of the 1872 Act, however, the Local Government Board seized the opportunity to make a series of Orders laying down the requirements in regard to qualifications, appointment, duties, salary and tenure of office of Medical Officers of Health and Inspectors of Nuisances, appointed by urban and rural sanitary authorities.

A further attempt to define the duties of the Medical Officer of Health was made in 1891, and it took the form of an order entitled the Sanitary (Officers) Order, applying only to the Metropolis.

Amended official rules concerning the conditions of appointment and duties of Medical Officers of Health in the provinces were contained in the Sanitary Officers (Outside London) Order of 1910, which applied also to those officers who were still in many places called Inspectors of Nuisances. As far as the Medical Officer of Health was concerned his principal duties, as laid down in Article XIX of the Order, were as follows :—

“He shall inform himself, as far as practicable, respecting all influences affecting or threatening to affect injuriously the public health within the District.

“He shall inquire into and ascertain by such means as are at his disposal the causes, origin and distribution of diseases within the District, and ascertain to what extent the same have depended on conditions capable of removal or mitigation.”

The question of the conditions of appointment and tenure of office of Medical Officers of Health and Sanitary Inspectors was deemed by Parliament in 1921 to be of sufficient importance to justify the Public Health (Officers) Act of that year. This enactment gave a virtual security of tenure to both classes of officers employed

by county boroughs (with few exceptions) and county districts by requiring that they should be removable only with the consent of the Minister of Health. A similar security of tenure had been given to Medical Officers of Health employed by county councils under the Housing and Town Planning Act, 1909.

An interesting feature of the Public Health (Officers) Act, 1921, was that it was laid down that an inspector of nuisances should henceforth be designated a sanitary inspector.

The Sanitary Officers (Outside London) Regulations, 1935, defined the duties of a Medical Officer of Health, as in the 1910 Order, by requiring him to inform himself "respecting all matters affecting or likely to affect the public health in his district," but added the significant words, not contained in the previous Order, "and be prepared to advise the local authority on any such matter."

It has already been emphasised that progress in safeguarding and improving the health of the people depends upon a number of factors. The decision to concentrate responsibility for the carrying-out of Public Health measures upon one specially designated official—the Medical Officer of Health—who was not only a medical practitioner but also, by experience or training, an administrator, was an imaginative conception which proved highly fertile in practice. Much of the credit for the local establishment of such Public Health services as sanitation, the control of epidemics, the care of the mother and the child, the treatment of tuberculosis and venereal diseases and the administration of hospitals rests with Medical Officers of Health. They were the practical exponents of Preventive Medicine through whose agency discoveries made by science were used for the benefit of the health of the people.

Quietly and unostentatiously, during the hundred years which have elapsed since this office was created, Medical Officers of Health¹ have laboured not only to safeguard the people committed to their charge from "the pestilence that walketh in darkness," but also from the minor evils of environment or habit which do not

¹ The names of some of the earlier Medical Officers of Health are as follows :—*Metropolitan*—City of London, Simon, Letheby ; Paddington, Burdon Sander-son ; Shoreditch, Barnes ; Camberwell, Bristowe ; St. George's, Hanover Square, Druitt, Aldis ; Chelsea, Barclay ; St. Pancras, Hillier ; St. Marylebone, Thomson ; Islington, Ballard. *Provincial*—Liverpool, Duncan, Trench, Stopford Taylor, Hope ; Manchester, Leigh, Tatham, Niven ; Birmingham, Hill, Robertson ; Leeds, Robinson, Goldie, Cameron ; Bristol, David Davies, D. S. Davies ; Southampton, Cooper, MacCormack, Osborn, Harris ; Sheffield, Griffiths, Hime. An interesting account of the early Metropolitan Medical Officers of Health is contained in Dr. E. Ashworth Underwood's article "The Field Workers in the English Public Health Movement," 1847–1875, published in the *Bulletin of the Society of Medical History of Chicago*, October, 1948, pp. 31–48.

threaten life but endanger health. Much of their work, highly important to the community as it was, has gone on almost unrecognised. Not for them were the titles and distinctions bestowed upon the consultant and specialist branches of the profession. But when the long account of the benefits conferred by the medical profession on the modern community has been finally computed, it will assuredly be acknowledged that the debt owing to the Medical Officers of Health of the past is a great one.

CHAPTER 2

THE LOCAL GOVERNMENT BOARD, 1871-1900

With the passing into law of the Public Health Act, 1875, the spate of sanitary legislation, running full during the two previous decades came virtually to a stop for many years. From time to time it will be necessary to notice Acts of Parliament in relation to factories or to housing, but in the sphere of Public Health the country had given the administrators, central and local, adequate powers to do all that was necessary during that period. The period from 1875 to the end of the century was therefore a time of consolidation during which some of the fruits grown from the seeds the sanitary reformers had sown years before became ripe for gathering. These fruits were not as yet very plentiful, and much work was necessary under the 1875 Act before the sanitary state of the country could be said to be even relatively satisfactory either in the towns or in the rural areas.

It is at any time difficult to estimate the standard of health attained by a community, but certain figures are available either from the ten-yearly Census Returns or from statistics published each year by the Registrar-General upon which a judgment may be founded. Annual statistics from the Registrar-General's Office—since 1871 under the Local Government Board—were birth-rates, death-rates and infantile mortality rates, together with the death-rates from tuberculosis. The Census figures for the year 1871 afford a good starting point from which to consider the health situation of the country from the admittedly imperfect basis of the statistical point of view. By 1871 the population (England and Wales) had reached a total of 22,712,000, and the number of inhabited houses was given by the Census Commissioners as 4,259,000, *i.e.* an average of 5.3 persons per house. In the year 1801 the corresponding figure was 5.6, and in 1851 it was 5.4. When considering these figures the assumption must be made that there had been no change during the period from 1801 to 1871 in the number of rooms per house and there is no evidence that any alteration had taken place in this average figure in the interval between these two dates. Between 1841 and 1861 there had been little, if any, change, either for the better or the worse, in the average number of occupants per house (p. 99), but by 1871, in spite of an enormous increase in population between that Census

and the previous one, there had occurred a slight, but noticeable improvement. The fact that the stress of house occupation had slightly eased did not necessarily mean that the housing situation had materially improved, since the standard of building and of repair of workmen's cottages was still deplorably low and, as the reports to the Privy Council show, there were many local authorities which were scandalously slack in carrying out their duties under the Sanitary Acts. It seems certain, therefore, that this vital factor in the health situation was unsatisfactory up to and beyond the year 1871. But although housing was unsatisfactory, the sanitary circumstances of the areas in which the houses stood had somewhat improved as a result of the efforts made in all—or practically all—urban areas, during the preceding twenty years, to instal sewers and drains, to remove refuse, and to pave streets and alleys. Such efforts would in time reduce the incidence of some of the infectious diseases, especially those carried by flies or by water, but sanitary improvements, of great value as they were, could not have the same overall effects upon the health of the worker and his family as the condition of the house in which they lived—and sometimes worked—for many hours a day.

The first of the annual figures to be considered is the death rate. Compared with the rates of to-day, the death rates in this country throughout the greater part of last century seem extraordinarily high, and they fluctuated very little over long periods of time. In the quinquennial period 1841–5 the crude death rate was 21.4 per thousand; in the period 1851–5 it was 22.7, and in the period 1861–5 22.5. Even ten years later the figure was 22.0. The infantile mortality rates during these four periods fluctuated round about the figure 150, and the tuberculosis death rates between 1856 and 1870 remained sensibly constant.

Tested by the available statistics, the standard of health up to the time of the passing of the Public Health Act, 1875 does not appear to have improved, in spite of the expenditure of effort and money upon sanitation during the two preceding decades. It has been suggested in a previous chapter that the reason why the health of the people—as tested by mortality statistics—had not improved *pari passu* with improvements in sanitation, was that the sanitary state of the country was only *one* of the factors influencing the Public Health, and that some of the other factors, including housing and conditions of work in factories, had remained much as they were before 1848.

One does not wish to emphasise unduly the country's successes in regard to sanitation up to the year 1875. Much remained to be accomplished with the help of the recently passed Public Health

Act, 1875, and this was especially the case in connection with water supplies. An account of the progress made in a number of areas to provide more plentiful supplies of wholesome water for public use will be given later in the present chapter.

It is pleasant to recount that the epidemic situation during the first few years of the life of the Local Government Board was not unsatisfactory. The annual reports of the Medical Officer to the Board did not, at that time, give details of the number of cases of various kinds of infectious diseases, as they were not then notifiable, and home visiting was only put into operation in the event of a major epidemic. Certain diseases were, however, endemic in the larger towns in England at that time and especially typhus, typhoid, smallpox and a severe type of scarlet fever, often referred to in the reports as "scarlatina." Tuberculosis was also exceedingly prevalent, not only in certain industries, but also among the general population, and in spite of the efficiency of vaccination, outbreaks of smallpox frequently occurred. The annual reports of Simon and his successors emphasise again and again the importance attached to vaccination and the concern of the Central Authority if in any year, and for any reason, the number of vaccinations declined. Anyone who has seen cases of major smallpox—and the doctors of that time saw many—will realise how dreaded it was, with its high death rate, its terrible striking power and the disfigurement it so often caused. The first annual report of the Medical Officer to the Local Government Board after the passing of the Public Health Act, 1875, gives some of the vaccination figures which were then available.¹ Out of 826,508 births in 1873, the number registered as successfully vaccinated was 704,666, namely, 85.2 per cent. This is, of course, excellent. The corresponding figure to-day would be less than 30 per cent. Perhaps the rather greater than usual popularity of vaccination in 1873 was due, in no small measure, to the severe epidemic of smallpox in the previous year when 19,094 deaths were registered from that disease.

There is much information available to show the bad sanitary state of certain areas in some of the towns, in spite of the general progress which had been made. The following are extracts from the Local Government Board's inspectors' reports in 1875 in regard to parts of named areas :—

“Prevalence of low type diseases. Sewerage and drainage either very defective or wanting altogether. . . . Want of systematic arrangements for refuse removal.”

¹ Annual Report of the Medical Officer of the Local Government Board, 1875, p. 13.

- “ Defective sewerage. Polluted wells. . . . Houses unfit for habitation. Scavenging arrangements defective. . . .”
- “ Enteric fever prevalent during the year. Sewer infection and questions of water pollution.”
- “ Defective drainage. Water supply insufficient and liable to contamination. . . . Unwholesome dwellings. Polluted open streams.”
- “ Severe epidemic of scarlet fever. Persistent presence of the disease, also typhoid fever. Infected bodies occupying inhabited rooms. Exposure of infected persons. No measures adopted to prevent the spread of contagion. . . . Dilapidated dwellings. Common lodging houses (not registered) both dilapidated and overcrowded. Slaughter-houses not registered. . . .”

In the light of reports such as these there is little cause for astonishment that outbreaks of typhoid fever in various parts of the country, generally of minor dimensions, were frequently under investigation by the Board's inspectors. From time to time an outbreak which would be regarded to-day as a serious one occurred, such as, for example, that at Croydon in 1875 when there were about 1,200 cases with 90 deaths. The mode of origin and spread of this epidemic is not made clear in the report, and it is difficult to gather whether the deep wells supplying the parish with water were infected or not. The Medical Inspector of the Board who investigated this outbreak was of opinion that the chief way in which the disease was spread was “ by the escape of infected air from the sewers and its inhalation by persons susceptible of the disease.” Atmospheric infection was still believed in as late as 1875 by many epidemiologists in spite of the work of Snow and Budd. But the day of the bacteriologists was rapidly approaching, and then all things—or, at least, many of them—would be made clear.

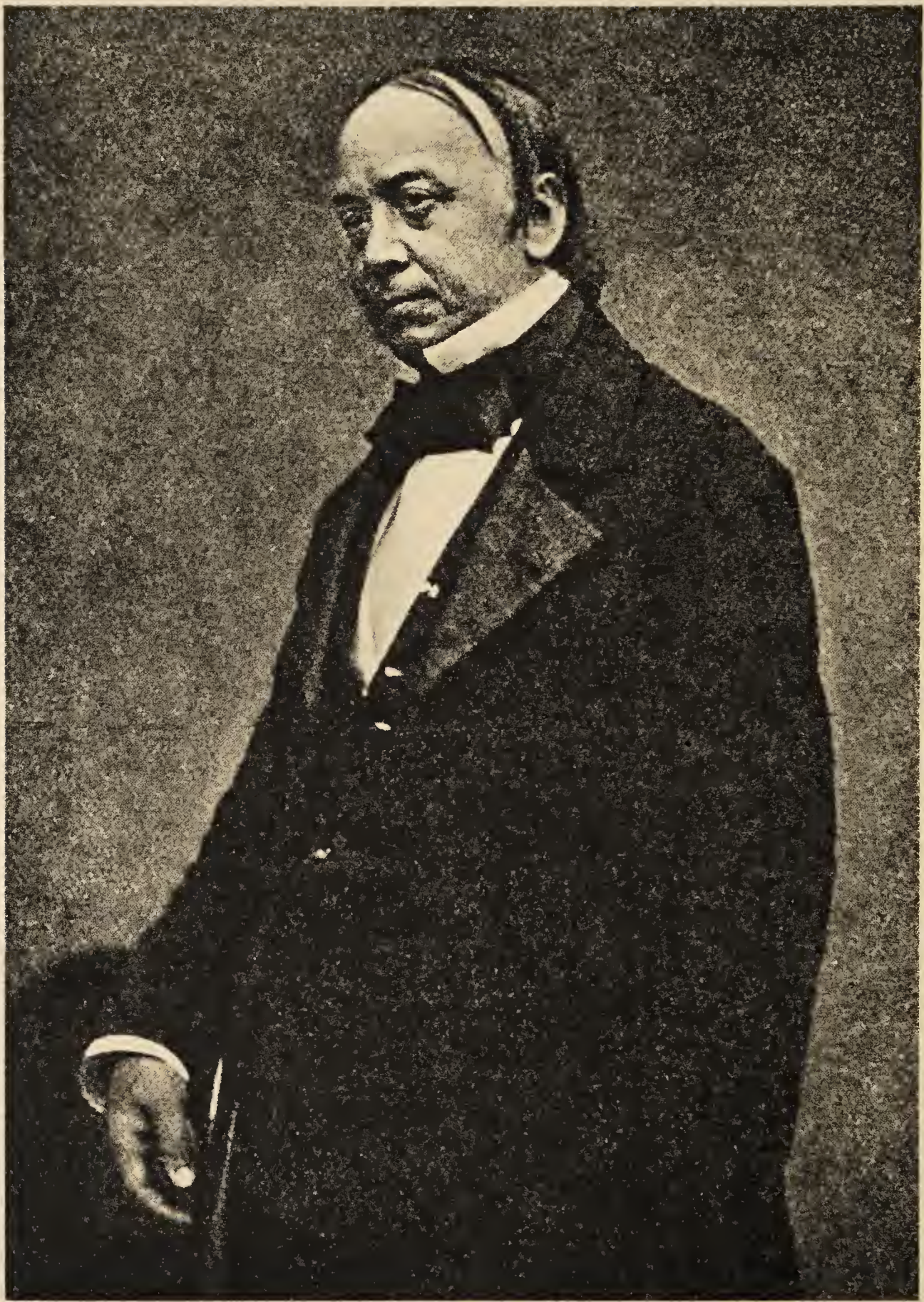
During the first twenty years of the life of the Local Government Board the main effort on the Public Health side was concentrated on improving the sanitary condition of those areas which had been slack or inefficient in the exercise of the powers committed to them. Each year in the Board's annual reports there were long lists of districts which the general or medical inspectors had visited in an attempt to persuade the authorities to take more energetic action to improve sanitary conditions. From time to time these visits are concerned with the outbreak of an epidemic of typhoid, typhus, smallpox, diphtheria or scarlet fever, but there is usually nothing of special interest in the reports presented on these quite common diseases. Occasionally, however, there appears a report concerning

a new or obscure disease and then the account takes on an added interest. In the annual report of the Board for the year 1880, for example, there is an account of an investigation into a small outbreak of "woolsorters' disease" in Bradford. This disease, of which the bacteriology was not then known, is due to a bacillus derived from the wool and hair of animals suffering from anthrax,¹ and at the time when this outbreak occurred it had been seldom recognised in this country for what it actually was. When, however, Van mohair, the fleece of a goat inhabiting a particular district in Asia Minor, began to be imported into this country about the year 1863 cases of anthrax commenced to be more numerous; and the sorters came to look upon this material as dangerous, some refusing to handle it. The inspector of the Board who investigated the cases occurring in Bradford analysed the high mortality statistics among woolsorters and expressed the view that this mortality was due to (a) pneumonia, congestion of the lungs and bronchitis; (b) consumption; (c) the less common forms of zymotic disease (pyæmia, etc.); and (d) causes ill-defined; and he proceeded to say that "as the diseases of sorters come to be more fully investigated, the influence of dust, as such, retires more into the background, and a specific infective agency comes to be a more and more prominent feature in the scene." This specific agency might often be, in his opinion, anthrax.

There are long accounts of smallpox epidemics in the 1886 Report, and mention is made of the presence of cholera in Europe both in that year and in 1885, but this infection, happily, did not reach England. By that time the cholera menace, for this country, was over and, in fact, no serious epidemics of this disease, first introduced in 1831, occurred in England after the 1866 outbreak.² These outbreaks of 1831-2, 1848-9, 1853-4 and 1866 had been responsible for myriads of deaths and much suffering. They had undoubtedly served as a stimulus to sanitary reform. Typhus and typhoid, two diseases possessing no ætiological similarities, but clinically distinguishable with difficulty at that time, were still widely prevalent. Typhus was endemic in England until after the end of the century, being, at all times, a source of anxiety to the Medical Department of the Local Government Board. It was recognised to be a disease fostered by dirt and overcrowding. "Until the time shall come when masses of population, brought down to nearly starvation point, shall cease to inhabit foul courts in which no air can enter,

¹ Koch's demonstration of the life history of the anthrax bacillus was given in 1876. Pollender had described the organism in 1849.

² There was a small epidemic of cholera in 1893 (p. 168).



SIR EDWIN CHADWICK (1800–1890)

and to huddle their miserable families into rooms that ought not to hold the half of them, we cannot hope that typhus will not appear again and again in our English towns.”¹

Included in the 1886-7 Report is a comprehensive survey by the Board's officers of the sanitary circumstances of most areas, excluding the large towns, in England and Wales. Information is given under a number of headings, including the following :— “Administration by Sanitary Authority,” “Work of Medical Officers of Health and of Inspectors of Nuisances,” “Hospital Provision,” “Cleanliness of Roadways and Domestic Premises,” “Sewering and Drainage,” “Refuse Removal,” “Water Supply,” etc. Criticisms of the local authorities and their officers and of the sanitary arrangements of the various areas are characterised by extreme frankness. Referring to one sanitary authority, for example, the Report says, “S.A. do next to nothing. . . . Sanitary administration at a standstill”; and of another, “Active and efficient.” Of officials the Report observes “Highly efficient” in one case, and “Not very satisfactory” in another. A reading of the Report conveys an accurate impression of the sanitary state of the country in or about the year 1886. It had improved considerably since 1875. In most populous places sewerage had been completed and practically everywhere great progress in this direction had been made. Water supplies were mostly on the “constant” system, but there is comment about shallow wells of a dangerous character in rural areas. Housing for the poorer people was, almost everywhere, insanitary, and in all respects unsatisfactory, and this was, throughout the country, the most undesirable feature of the whole sanitary situation. There are, however, occasional commendations of “exceptionally good,” “satisfactory,” “considerable improvements,” etc., even in regard to housing. There is little doubt that the standards of the Board's inspectors were not unduly high; but the reports indicate a process of continuing improvement stimulated by energetic pressure from the Central Authority. The Public Health Act, 1875, was being well administered, and its operation would, by the end of the century, satisfy most of the ideals of the sanitary reformers. Sir Edwin Chadwick, who died in 1890, was able to see many of his dreams coming true, even if, during the later years, he took no active part in their fulfilment.

Because of its unsatisfactory local government structure, London did not act as an example to the rest of the country in the effort

¹ Report of the Medical Officer of the Local Government Board, 1886-7, p. 11.

towards sanitary improvement, and it remained, until late in the century, a chaos of separate units, some having good, but many bad or indifferent, sanitary records. The record of London for the severity of its epidemics of cholera and typhus was not one of which to be proud, and typhus, that frequent accompaniment of dirt and overcrowding, was constantly present. Most of the sanitary duties of the Metropolis were performed by the vestries, and the Metropolitan Board of Works for some years after its founding in 1855 was only responsible for the main sewers and streets. There were troubles in the 'eighties about the fouling of the Thames with sewage, but this was an old grievance and the people of London had been complaining for years about the stench from the River.¹

Housing in London, as in other places was, during the second half of the century, maintained by private enterprise assisted in a rather sporadic fashion by voluntary housing associations, some of which had a short life. The window tax, imposed at the end of the eighteenth century, was repealed in 1851, and this was of assistance to those who were anxious for health reasons to encourage the admission of light and air into living rooms. London's sanitary condition, at the time of the passing of the Public Health Act, 1848—which did not apply to the Metropolis—was sufficiently like that of the other large towns not to need separate description. The great forward step at this time was the founding of the Metropolitan Board of Works in 1855² through the vision and energy of Sir Benjamin Hall, the President of the General Board of Health. Its duties in regard to main sewers and streets have already been referred to above and in succeeding years other functions were added including flood prevention, parks and open spaces, housing and overcrowding, control of the fire brigade, etc. One of the weaknesses of the position of the Metropolitan Board of Works was that it had no powers of supervision over the vestries and the district boards. The Board had no powers in the first place to deal

¹ As, for example, during the summer of 1858, which was exceptionally dry, so that the levels of water in the Thames became much lower than usual. In the middle of that year complaints of the nuisance arising from the River became widespread and there was general alarm in London about the danger to the public health. Rumours were spread about that Parliament would be compelled to interrupt its deliberations. Questions in both Houses called the urgent attention of the Government to the problem of the disposal of London's sewage. On July 15th, Mr. Disraeli introduced a Bill for dealing with this question and it received the Royal Assent on August 2nd, 1858. The Act (21 and 22 Vict. cap. 104) amended the Metropolis Local Management Act, 1855, by extending the powers of the Metropolitan Board of Works to borrow money to enlarge sewage disposal works.

² Metropolis Local Management Act, 1855.

with housing, but in 1875 the Artizans and Labourers Dwellings Improvement Act¹ required the Board to acquire and demolish dwellings in areas declared to be insanitary and to let or sell the cleared area for rehousing at least as many persons as had been displaced.² Sir Richard Cross's Act, both in London and in the provinces, was not a conspicuous success, for its procedure was slow and the terms of compensation to owners were so onerous that few local authorities would face the expenditure necessary to bring it into operation on a large scale.

The fundamental problem of London's government was solved in 1888, under the Local Government Act of that year, by the formation of the London County Council which, on April 1st, 1889, took over the duties of the Metropolitan Board of Works. In 1899 the London Government Act substituted a system of 28 Metropolitan Boroughs for the large numbers of District Boards and Vestries which had, up to that time, administered the local sanitation of London.

The great towns of Birmingham, Liverpool and Manchester, under more homogeneous forms of government, had made substantial progress in sewerage and draining their areas before the Public Health Act, 1875, came into operation, and this work was continued under that Act. Liverpool had appointed a medical officer of health in 1847, Manchester in 1868 and Birmingham in 1872. Liverpool, with its docks, its casual labour and its mixed population, was confronted with a peculiarly difficult problem, especially in regard to housing, for by the time the Town Council had awakened to the need for a sanitary environment almost irreparable harm had been done. In 1864 there were upwards of 3,000 courts representing 22,000 insanitary houses, containing a population of more than 100,000. This evil was of the first order of magnitude. Liverpool evolved in the local Sanitary Amendment Act, 1864, a peculiar, but, in the long run, largely effective method of dealing with these insanitary houses. Upon report of the Medical Officer of Health that specified houses were unfit for human habitation the Council, after approval, sent the list to the Clerk of the Peace. The report was then brought before the Grand Jury at Quarter Sessions who, after hearing evidence and viewing the property, decided whether or not the houses mentioned in the report were insanitary and ought to be demolished. If the Grand Jury decided in favour of demolition, their doing so was called a "presentment." The

¹ Sir Richard Cross's Act.

² Gibbon, Sir Gwilym, and Bell, R. W., *History of the London County Council*, p. 37.

owners had a right of appeal to Quarter Sessions from the decision of the Grand Jury. After presentment the properties might be acquired by agreement or by arbitration.¹ This procedure was lengthy and costly, and little use was made of it until after 1883 when numerous presentments occurred. On each occasion counsel were engaged both on the side of the owners and the Corporation, and strenuous legal battles were fought. This was an advantage, because facts which had been hidden from the more influential of the citizens, were fully disclosed. "The battles against slumdom were in fact fought and won then . . ."²

Manchester possessed a more homogeneous population than Liverpool, and there was less casual labour. Its sanitary problems were, however, similar, and it possessed an equal amount of slum property but of a different kind. In Manchester the typical insanitary house was of the back-to-back type. This method of building, still more common in the West Riding, was rather better from the hygienic point of view than the court house because it admitted at least ventilation in front, whereas the court house—often back-to-back—was situated in nearly stagnant air. In 1844 a Manchester private Act prohibited the building of back-to-back houses and, under the same Act, the Council embarked on a scheme of building privies, so that by 1851 it had dealt with 17,927 dwellings.³ Manchester was, however, late in adopting the water carriage system.⁴

The four large towns of London, Birmingham, Manchester and Liverpool were, on the whole, reacting well to their sanitary problems during the second half of the nineteenth century, and they possessed sufficient rateable value to undertake large schemes for the purpose of sewage disposal and the supply of water. Where the Local Government Board found difficulties in stimulating progress was in the small urban areas, and the annual reports show many black spots, where a piped water supply was absent, privy middens unemptied except on infrequent occasions, and houses found full of dilapidations. Energetic action between 1871 and 1900 by the Board's inspectors, even in areas such as these, had brought about definite progress and in 1886, as the report of that year shows (p. 131), the general sanitary condition of the country was by no means, relatively speaking, unsatisfactory. It is of this period that Clapham remarks: "Yet the cities of Britain

¹ Hope, E. W., *Health at the Gateway*, pp. 160–1.

² *Ibid.*, p. 162.

³ Lady Simon, *A Century of City Government*, p. 288.

⁴ *Ibid.*, p. 289.

were among the healthiest in the world, and were certainly the healthiest of the Old World. The death rate of New York was worse than that of Manchester; those of Paris and Berlin worse than that of Liverpool; and that of the whole city which the Victorian knew as St. Petersburg nearly 25 per cent. worse than that of a small, selected, black London area such as Clare Market.”¹

Water Supplies to Urban Areas

As the Poor Law Commissioners recognised in their Report on the Sanitary Condition of the Labouring Population of Great Britain, the cleanliness of towns depends upon the availability and accessibility of copious supplies of water. In general, the Commissioners recommended the water-carriage system for the removal of sewage from the vicinity of houses and after the passage of the Public Health Act, 1848, the sewerage and drainage of towns began in earnest. For a time the supplies of water already available sufficed, especially in districts where sanitary progress was slow, but before many years had passed all of the larger towns were looking around to discover fresh sources from which to draw the urgently needed water. Speaking generally, the water supplied to the majority of the larger towns during the first half of last century was pumped from wells; but in some cases, and this especially applied to London, it was drawn from a river near at hand. Water drawn from wells, if pumped from deep strata, was as a rule of a satisfactory standard of purity, whereas the water obtained from rivers and streams might be contaminated by sewage. The amount of water which could be pumped up from underground sources was, in most areas, only sufficient to supply a limited number of people. The need for additional sources of water was therefore strongly influenced by the rapid rise of population during the whole of the nineteenth century.

London's problem was a particularly acute one. Underground sources of water were never within recent times sufficient for the needs of more than a fraction of the population of the Metropolis, and it had been customary during most of London's long history to draw water from the Thames. At the time when interest first began to be taken in sanitation the water supplies of London, drawn from the Thames, were purveyed to such houses as had piped supplies by a large number of water companies, which in some areas were in active competition, street by street. There was, of course, no supervision of the quality of the water and, until the end of the fifth decade, little suspicion that there might be danger to health

¹ Clapham, J. H., *An Economic History of Modern Britain—Free Trade and Steel*, p. 446.

in consuming fluid taken from parts of the River which were heavily contaminated with sewage. Mention has already been made (p. 64) of the Lambeth Company and the Southwark and Vauxhall Company and the part which the contaminated water supplied by the latter company played in the 1854-5 cholera outbreak. The supply of water by private companies, founded for the purpose of making a profit, was customary throughout the whole of England until well after the middle of last century. Water companies were not, however, entirely unregulated. In order to gain control over the sources of supply it was necessary for the company to promote a private Bill in Parliament. Most of the local histories contain accounts of rival schemes promoted in Parliament by private companies; but they also show that there was much support for the principle of public ownership of water supplies very early in the century. The principle of public ownership of the means of supply and distribution of this essential commodity was indeed advocated by the General Board of Health in a report issued in 1850, following on extensive investigation of the arrangements in London. The report alleged that the existing supplies were of inferior quality, were so hard as to be ineligible for domestic use, that they generally contained an excess of organic matter and that certain of them were polluted by the sewage of the Metropolis. Apart from the quality of the water, the Board criticised the intermittent method on which supplies were distributed and said that it failed to give adequate provision either for extinguishing fires or for the surface cleansing of houses and public ways. From the point of view of administration it was undesirable, in the Board's opinion, that the Metropolis should be dependent for its water supplies on a number of private companies.

The specific proposal of the Board, which was never accepted, was that the existing sources of supply—from the Thames—should be abandoned, and that new sources of soft water should be sought from the Surrey sands where there was a tract of 150 square miles which could be used as a gathering ground.

Undoubtedly the foregoing criticisms of the General Board of Health on the qualities of the greater part of London's water supplies at that time were justified, and the cholera outbreak of 1853-4, propagated by that means, gave emphasis to all that the Board had said. Nevertheless, in spite of criticism, the water companies continued to supply the London areas for another fifty years, and the London County Council found this one of their most difficult problems when they took over the burden of office on April 1st, 1889. Several Bills which were presented to Parliament

by the Council failed to make progress, and it became evident that public opinion was in favour of an *ad hoc* water authority for the Metropolitan area. There were at this time proposals to bring water to the Metropolis from Wales, and the investigation and discussion of this project further delayed the solution of London's water problem. The Royal Commission under the chairmanship of Lord Llandaff, which sat from 1897 to 1899, reported in 1900 with the recommendation that a water board should be set up for London and that the supply should be taken from the Thames. Delays of various kinds still occurred, and it was not until 1902 that the Metropolitan Water Board was founded.

Some of the larger towns in this country, more fortunately situated in the matter of available water supplies than London, had already, by 1850, begun to initiate improvements and extensions. During the first half of the century Birmingham, Manchester and Liverpool depended, like London, on the operations of private companies. The first of these companies in Manchester was the Manchester and Salford Waterworks Company, the possessor of a private Act obtained from Parliament in 1809, which supplied the area with water pumped from wells until 1844. Increases in population made heavy demands on all the water resources the Company could secure, and their proposal to promote a Bill for the purpose of obtaining water from the River Etherow and the Longdendale Valley in Derbyshire was opposed by a rival company and by the Manchester Town Council. The Corporation had determined to buy out the Waterworks Company, to take over the Longdendale Valley as an additional source of supply, and to levy a special rate for these purposes.¹ A Government inquiry disclosed that half the population of Manchester had no supply except what they could obtain from pumps and carry to their houses.² This water was intermittent, most of the pumps being locked up for the greater part of the day. The passing of the Manchester Waterworks Act, 1847, was a great triumph for those who supported the principle of the public ownership of water undertakings. The supply thus secured sufficed for the borough until the late 'sixties, when the Consulting Engineer reported that it was imperative to explore the possibility of finding additional sources of water. Unfortunately for Manchester, the thickly-populated surrounding areas had already appropriated for their own purposes the water resources near at hand, so that it was necessary to go further afield if large supplies were to be secured. Lake Thirlmere, 96 miles away, was finally

¹ Lady Simon, *A Century of City Government*, p. 351.

² *Ibid.*, p. 351.

chosen as the new source of supply and the aqueduct was completed in 1894. Further pipe-lines were laid in 1904, 1915 and 1927. As an additional safeguard the Manchester Corporation, in 1929, began a scheme for bringing supplies from Haweswater to the City—a distance of 73 miles.

Liverpool's history in regard to its water supplies followed much the same lines as that of Manchester. Prior to 1786 water carts were employed in the distribution of water, obtained from shallow wells, which was charged for at the rate of one halfpenny per bucket. In 1799 a private Act incorporated a company described as "The Company of Proprietors of the Liverpool Waterworks," which supplied the town through wooden mains, each eight inches in diameter.¹ In 1822 there was a second private Act incorporating another company which actively competed with the first, laying mains in the same streets. After a time this competition ceased as arrangements were arrived at to make a division of the area of supply, and prices were raised to the consumer. The Report of the Health of Towns Commission, 1844, comments that "so long as both Companies have a mutual understanding they may advance the price, or make specific agreements as favourable to themselves as they choose" In 1848 the Town Council obtained from Parliament the Liverpool Waterworks Act which authorised the impounding of the upper waters of the Rivers Douglas and Roddlesworth in Lancashire to form the Rivington Reservoir. These works were commenced in 1852 and water from the Rivington Reservoir was first delivered to the town in 1857. Deep wells were also used as the demands of the borough grew with the increases in population and the gradual extensions of sewers and drains, and a new reservoir was constructed at Rivington. It became evident to the Town Council, as the years went by and the borough increased in size, that they should give earnest consideration to the question of securing a source of supply which could be extended as needs arose. Liverpool and Manchester, unlike London, were within practicable distance of mountainous districts with a heavy rainfall, and it was merely a matter of engineering to bring the copious supplies of water which were available to the homes of the consumers. The Vyrnwy Scheme was commenced in 1888 and the works were formally opened in 1892. The completion of this scheme assured copious supplies of water to Liverpool for an indefinite period.

In the earlier part of the century there was no centrally organised water supply in Birmingham, but in 1826 the Birmingham Water-

¹ Hope, E. W., *Health at the Gateway*, p. 133.

works Company succeeded in obtaining an Act of Parliament which authorised the taking of water from the River Tame. It was not until 1831 that the first reservoir was opened at Aston. In 1849 the Company, at the request of the Corporation's Sanitary Committee, agreed to give a constant supply. In 1854 and 1855 the Company obtained powers to take water from Hawthorn Brook (Witton), Perry Brook and the River Blythe and further extended the undertaking by an Act passed in 1866. The area of supply was extended to Northfield and Handsworth in 1870 and the Company constructed a new reservoir at Whitacre. At that time the daily supply was 17,300,000 gallons. The Birmingham Corporation, like most other urban authorities, was fully aware of the advantages to be derived from the public ownership of the water supply and made several attempts, all unsuccessful, to purchase the undertaking; but in 1874 Alderman Joseph Chamberlain,¹ then Mayor, proposed the introduction of a Bill to acquire, if necessary compulsorily, the undertaking, on the grounds of the intimate connection between a pure and abundant water supply and the maintenance of public health. One of Mr. Chamberlain's arguments for the proposal to introduce a Bill into Parliament for this purpose was a statement of the general principle that "all regulated monopolies, sustained by the State, in the interests of the inhabitants generally, should be controlled by the representatives of the people, and not left in the hands of private speculators."² After long discussions before Committees of the House of Commons and the House of Lords, the Birmingham Waterworks Act was passed on August 2nd, 1875; but it was not until January 1st, 1876 that the negotiations with the Company required by the Act were completed and the undertaking transferred to the Corporation.³

Extensions to the waterworks were undertaken by the construction of reservoirs at Shustoke and Whitacre and the sinking of a new well at Longbridge. In the late 'eighties the Birmingham Corporation was faced with the difficulty, common to most parts of the country at that time, that near-by sources of supply, which had yielded a relatively pure water for many years, were beginning to be polluted on account of the great increase in the population, and the question of going much further afield began to be considered. Accordingly, in 1891, a report from the consulting engineers was

¹ Mr. Chamberlain was, of course, better known as one of the greatest of the nineteenth century English statesmen; but his services, and those of his family, to Birmingham should not be forgotten.

² Bunce, J. T., *History of the Corporation of Birmingham*, 1885, Vol. I, p. 407.

³ *Ibid.*, p. 414.

considered by the Town Council. The recommendation of the consulting engineers was that gathering grounds in the valleys of the Rivers Elan and Claerwen, about 80 miles away, in Radnorshire, should be purchased.¹ The scheme would require the construction of six reservoirs in the valleys of the Elan and Claerwen, a new reservoir at Frankley and the building of an aqueduct connecting the source of supply in Wales to that village. This proposal, which was to solve Birmingham's water supply problems for an indefinite period, received sanction in the Birmingham Corporation Water Act, 1892.²

Although the great majority of the larger towns in England control their own water undertakings, which are managed by a Committee of the Council, this is not invariably the case and there is much diversity throughout the country in regard to the administration of the supply of water. Bristol may be instanced as an example of a large city which receives water supplies from a private company. This company received its powers in 1846 and has operated under the name of the Bristol Waterworks Company since that time. The supply—a rather hard water—is mainly obtained from gathering-grounds in the Mendip Hills. It is stored for a few days, filtered through sand filters and finally chlorinated.

The Health of the Industrial Worker

During the period between 1871 and 1900 there was comparatively little activity in regard to factory legislation but progress of a satisfactory character was made in the equally important direction of administration. Factory regulations were by this time accepted by masters and men as part of the proper organisation of industry, and much of the bitterness which had been engendered during the early years of the century, when the struggle for the fundamental right of the ten hours' day was taking place, had died away. There was, however, a strong body of opinion manifesting itself in the 'sixties and 'seventies, that ten hours a day of strenuous labour, at least in the case of women and young persons, was more than was consistent with the health of these operatives and efforts were made to introduce a nine hours' day. In 1873 Dr. Bridges and Mr. Holmes were instructed by the Local Government Board to report upon the health of women, young persons and children engaged in textile manufacture; and they found that since the Act of 1847 there had been a tendency to put increasing pressure on workpeople by giving each operative a larger amount of machinery to attend to and by

¹ Vince, C. A., *History of the Corporation of Birmingham*, Vol. III, pp. 298–9.

² *Ibid.*, p. 134.

increasing the speed of the machines.¹ It is likely, of course, that this would have happened independently of the ten hours' day, as the pace of competition in the markets of the world was increasing. The two Commissioners also investigated the danger to the health of operatives arising from the emission of fine dust, especially in the carding-rooms, and they found that the use of extractor fans to carry the dust away, was unusual. In view of the facts disclosed by this investigation Dr. Bridges and Mr. Holmes recommended in their report to the Local Government Board that there should be a reduction in working hours from sixty to fifty-four a week on the grounds that this would be in the interests of the health of the operatives. In 1876 a Commission which had been appointed to consider the consolidation of the factory and workshop laws drew attention to the complexity of the legislation governing this subject which, as the factory inspectors pointed out, made administration very difficult. The Factory Act, 1878, was based upon the recommendations of the Commission. It abolished the arbitrary distinction between factories and workshops, based on the numbers employed, and laid down the definition of a factory as a place where, for the production of articles for sale, mechanical power was used. The Act, while generally consolidating the law relating to factories, weakened the position of women employed in workshops by enacting that their ten and a half hours' work could be performed at any time between the hours of 6 a.m. and 9 p.m., thus preventing the inspectors from checking the number of hours worked.

One of the most interesting features of the period from 1871 to 1900 from the Public Health point of view is the gradually increasing emphasis which came to be placed upon the protection of the workers employed in factories where processes injurious to health were carried on. Simon, in one of his reports to the Privy Council, had emphasised the almost universal danger of dust in industry and had described the injury to the health of operatives in certain occupations owing to such poisons as lead and phosphorus. Although some provision was made in the Act of 1864 for protecting the health of workers engaged in such industries as the potteries, lucifer-match making and some others, the benefit of this legislation was largely illusory owing to the lack of precision in the wording of the relevant sections. In 1878, however, the employment of children and young persons was forbidden in white lead and other factories and in 1883 an Act was passed requiring, in detail, stringent precautions to be taken in white lead factories; and, somewhat later, suitable regulations were made to apply to certain trades

¹ Hutchins, B. L. and Harrison, A., *History of Factory Legislation*, p. 174.

where there was danger from dust. In 1891 the Secretary of State was empowered to make special rules or to lay down special requirements in the case of all persons engaged in dangerous processes.

One of the subjects which attracted a good deal of attention during the last years of the century was that of sweated labour either in workshops or in houses. Workshops in which no mechanical power was used, and in which only adult males were employed, were not subject to any of the requirements of the Factory Acts; and those in which women were employed could only be imperfectly supervised by the inspectors. Much sweated labour, especially in connection with the tailoring trade in the East End of London, was employed in dwelling-houses, often of a filthy and insanitary type, and it was difficult for both the Home Office inspectors and those of the local authority to exercise any control over these appalling places or to take any effective steps to protect the health of the men and women who worked in them. A Special Committee appointed by the House of Lords on the motion of Lord Dunraven in February, 1888, expressed the opinion that instead of increasing the competitive power of the industry these sweated trades were a grave handicap to it. Some others of the domestic industries were the cause of grave public disquiet apart from the East End tailoring shops. Of these some of the worst conditions existed in connection with the chain makers' domestic establishments in the Midlands. It was commonly supposed at that time that the majority of the sweaters were rich men who were grinding the faces of the poor; but it appears from the evidence available that many were—at least at first—nearly as poor as their underpaid and overworked victims and possibly harder masters on that account. There was, however, a unanimous feeling that the use of the large reservoir of unskilled labour in this way, apart from the harm it did to industry generally, was anti-social because employment in sweated industries rapidly ruined the health of workpeople who, suffering from tuberculosis and other diseases, were thrown on the scrapheap, to become, instead of assets, a liability to the State. Sidney and Beatrice Webb call these industries "Parasitic Trades" and this is a perfect description of them.¹

Public clamour resulted in the passing of the Factory Act, 1891, under which the Home Office was empowered to make regulations for the supervision of "outworkers" both by factory inspectors and inspectors of the local authority. A further Act, passed in 1895, contained a "Particulars Clause" under which the occupier of a

¹ *Industrial Democracy*, p. 749.

factory or workshop was required to furnish in writing particulars of the rate of wages paid to each worker.

The Acts of 1891 and 1895 were the last of the important Factory Acts to be passed in the nineteenth century. We have seen in the history of this class of legislation the struggle for the acceptance of the principle of State supervision of the conditions in factories, the prolonged agitation for the limitation of hours of work of women and children, at first confined to textile factories and then extended to others, the important decision to appoint factory inspectors, the requirements in regard to the protection of machinery, the making of regulations in connection with industries where there was special danger to health, and the extension of the Factory Acts to cover persons employed in domestic industry. By 1900 these Acts were being reasonably well administered, after the trials and errors of nearly a hundred years, and the body of rules and regulations which they represented was exercising a highly favourable influence upon the health of the worker in industry. One of the surprising features about the regulation of the hours worked in industry is the little direct influence which the trade unions exerted during most of the century upon a matter which seems to be strictly within their province.

The Shop Hours Acts

The first legislation passed for the purpose of regulating conditions of work in shops was the Act of 1886 which made it illegal to employ any "young person" (*i.e.*, any person under the age of eighteen) in a shop for more than seventy-four hours a week. This Act followed the report of the Select Committee of Inquiry which disclosed the distressing fact that in many places the hours of work of shop assistants were eighty-four to eighty-five hours a week, and that such conditions had a disastrous effect on the health of the workers and especially in the case of women and girls. Although the Act of 1886 limited the hours of working of young persons it did not deal with adults, either male or female, and according to the report of the Select Committee on Shop Hours Regulation, 1892, it "remained generally unenforced and even to a great extent unknown." As a result of the report of the Select Committee the Shop Hours Act, 1892, was passed. This repeated the requirement of the Act of 1886 that no young person should be employed in a shop for more than seventy-four hours a week, including meal times, and it placed the onus of inspection on the councils of counties and county boroughs. Amending Acts, dealing with details of administration, were passed in 1893 and 1895, the

latter enforcing the display of notices in shops in regard to the hours of work.

One of the interesting reports issued by the Royal Commission on Labour, during the course of its investigations, was that in 1893 by Lady Assistant Commissioners, on the conditions of female employment in such occupations as shop assistants, milliners, dressmakers and laundresses, and it also deals with phosphorus necrosis among match workers. As regards the hours of work of female shop assistants it is plain from the evidence that many were working more than seventy-four hours,¹ that the amount of time allowed for meals was inadequate, and that the living-in system, with its poor and often insanitary accommodation and its unsatisfactory food, was in many cases a menace to the health of the employees. The only further legislative provision in regard to the conditions of work in shops, during the nineteenth century, was the requirement in 1899 that seats should be provided for women shop assistants.

The Health of Seamen

Conditions of work in the Mercantile Marine differ so much from those in factories that it is not possible for the Legislature to deal with seamen on the same principles as they have adopted for other workers in industry. The seaman is under discipline and he has to be provided with quarters and, usually, with food. When he is at sea his home is far away and he loses many of the comforts and amenities which are regarded as a matter of course by the lowest paid worker. Although much of the prosperity of Great Britain has depended, and still depends, upon overseas trade and commerce the seaman has not in the past been well treated even in comparison with his comrades in the factories. In the earlier centuries, the standard of food and accommodation for seamen in British ships depended upon the whims and fancies of the owners and captains who had little knowledge of the conditions necessary to maintain the crews of ships in good health during long voyages. An honourable exception to this statement was Captain James Cook, who devoted much thought and energy to seamen's welfare in the ships he commanded. At that period the great danger to the health of crews and passengers during long voyages was scurvy,²

¹ This was not illegal in the case of women over the age of eighteen.

² We owe to Dr. James Lind (*Treatise on the Scurvy*, 1755) the first accurate description of scurvy and suggestions for its prevention. Lind was physician to the Haslar Naval Hospital from 1758-1783. John Howard, the prison reformer, who visited this hospital in 1788, refers to it as being well-conducted, clean and quiet. See Howard's *An Account of the Principal Lazarettos in Europe*, p. 180.

a disease since discovered to be due to the absence of a vitamin in the diet. The histories of voyages in the sixteenth, seventeenth and eighteenth centuries make tragic reading. Captain Davies of the "Desire," who discovered the Falkland Islands in 1592, had only sixteen men left out of his crew on the homeward voyage; and Anson during his famous voyage round the Cape in 1740 lost most of his men from scurvy. Cook succeeded in preventing scurvy amongst his crews by instituting drastic reform in the dietaries of officers and men. He provided the crews with green foods whenever possible, and "wort" prepared from malt, and regarded beer as a useful anti-scorbutic. Sour-kraut was also regarded as useful, particularly as it lasted all the voyage. Cook preferred inspissated lemon juice to lime juice, and, as regards general hygiene, he attended to the cleanliness of the persons and clothes of members of the crew, provided as far as practicable plenty of fresh water, and did his best to ensure that his men kept dry and that their quarters were adequately ventilated.¹

The use of iron in the construction of ships, introduced in 1838, made it possible to increase tonnages and gave owners the opportunity of making better provision for the accommodation of seamen. The Merchant Shipping Act, 1867, stipulated that the allowance of space for each man should be 72 cubic feet and 12 feet of floor space. In 1894 the Merchant Shipping Act, which consolidated previous legislation, laid down the same standards of space, and provided that all duties in relation to the survey and measurement of ships should be performed by surveyors in accordance with regulations made by the Board of Trade. The subject of provisions on ships was dealt with for the first time by the Merchant Shipping Act, 1854, which stipulated that every seaman should be furnished with a copy of the scale allowed to the men during the voyage. But this scale still remained at the discretion of the owners. The Merchant Shipping Act, 1894, laid it down that in the case of ships trading from the United Kingdom through the Suez Canal or round the Cape of Good Hope or Cape Horn, barrels of beef and pork, preserved meat and vegetables in tins, etc., intended for the use of the crew, should be inspected by an officer of the Board of Trade before shipment whenever practicable, and if found deficient in quality the ship might be detained until the matter was remedied.²

Diseases amongst merchant seamen have been fully investigated

¹ Howard-Jones, J., *Hygiene of the Mercantile Marine*, 1930.

² It was not until the passage of the Merchant Shipping Act, 1906, that a definite scale of victualling for seamen was laid down.

by the Board of Trade and the Registrar-General and much information on this subject is contained in the reports of Port Medical Officers. In the view of Sir Thomas Oliver the common diseases of sailors, such as those of the respiratory organs, and heart, including rheumatism and phthisis, are partly the result of their immediate environment and insanitary surroundings, also of exposure and getting wet.

CHAPTER 3

THE DEVELOPMENT OF SCIENTIFIC MEDICINE IN THE 19TH CENTURY

This period, of which we may date the beginning to the publication of Pasteur's researches into the processes of fermentation, is the most fertile from the point of view of the application of science to the diagnosis and treatment of disease, in the history of medicine.

The work of Pasteur is perhaps unique because it led so quickly to results of the highest importance in medicine. We have seen in a previous chapter (p. 80) how Pasteur, after completing his work on alcoholic fermentation and lactic fermentation, had satisfied himself, by the most careful experiments, that the theory of the spontaneous generation of organisms, held for hundreds of years, was untrue, and that, as a consequence, all forms of life must spring from antecedent forms. Pasteur was elected an Associate of the French *Académie de Médecine* in 1873, and at a meeting of surgeons in 1878 he communicated to them his views on the application of the Germ Theory to their particular subject in the following words: "If I had the honour of being a surgeon, convinced as I am of the dangers caused by the germs of microbes scattered on the surface of every object, particularly in the hospitals, not only would I use absolutely clean instruments, but, after cleansing my hands with the greatest care and putting them quickly through a flame, I would use only lint, bandages and sponges which had previously been raised to a heat of 130° C. to 150° C., I would only employ water which had been heated to a temperature of 110° C. to 120° C."¹

Louis Pasteur emphasised his theories on the causation of communicable diseases to meetings of members of the medical profession, but he also continued his researches into the nature of the micro-organisms—regarded by him as specific—which, by gaining admission to the human body through many portals of entry, produced a series of diseases which mankind, by bitter experience, knew so well. He also experimented on methods of protection, notably, in the first place, by the use of a vaccine. His famous demonstration of the virtues of his anthrax vaccine took place before a number of farmers by whom he had been supplied with sixty sheep. Twenty-five of these he vaccinated with his protective vaccine, twenty-five he left unvaccinated and therefore unprotected, and ten he kept for comparative purposes. The fifty

¹ Walker, M. E. M., *Pioneers of Public Health*, p. 149.

sheep were then heavily infected with the bacilli of anthrax. As a result of this experiment, the twenty-five unvaccinated animals died and the twenty-five vaccinated survived and, in appearance, contrasted favourably with the ten uninfected sheep. This was an experiment of the utmost importance to humanity—as was, indeed, all of Pasteur's work—because it showed for the first time that it was possible, by a suitable process of vaccination, to protect against another disease besides smallpox. The protection thus afforded was to an animal, and it was not until several years had passed that he turned to the last research of his life—that of discovering a vaccine which could be used against hydrophobia. Before then, Pasteur devoted some time to the study of chicken cholera, discovering, during the course of this work, methods both of attenuating and enhancing the virulence of cultures of organisms. His researches on rabies (hydrophobia) made him world famous because up to that time no method of treating anyone bitten by a mad dog had been discovered. Rabies, much more common then than now, was universally dreaded.¹ Pasteur obtained his virus from the spinal cord of a dog affected by the disease and attenuated it, so that it could be used in the preparation of a vaccine, by a process of drying. His first human experiment was in 1885 on Joseph Meister, a child of nine, and it was successful. This success led to the founding of the Pasteur Institute in Paris where the great scientist was assisted in his work by such brilliant pupils as Metchnikoff, Roux, Yersin, Calmette, Chamberland and Pottevin.

By these researches Pasteur founded the science of bacteriology and there followed after him a long line of distinguished successors. If Pasteur has the honour of making the first fundamental researches in bacteriology, to Robert Koch (1843–1910) belongs the credit of placing the new science on an unassailable foundation by discovering new organisms and perfecting fresh techniques. Koch had a brilliant scientific mind with a logical perception of each of the steps necessary to be taken to solve the problems of a newly developing branch of human knowledge. After taking a medical degree at Göttingen he became, in 1872, Medical Officer of Wollstein, and there, amid the cares of private practice and with few laboratory facilities, he commenced the researches which were to make him famous. Up to the time of Koch it had not been demonstrably proved that the organisms associated with a particular disease were necessarily the cause of it. To the scientific mind, micro-organisms found invariably at the site of the disease or circulating in the blood

¹ Rabies was stamped out in this country in 1897 by an Order for the muzzling of Dogs. The Order was re-imposed in certain parts of the country in 1919.

of patients suffering from the disease might, in the absence of any further knowledge, and if they were not found except in association with the disease, be either the *cause* or the *effect* of the disease. It was doubted, for example, whether the long rod-shaped organisms found in the blood of animals suffering from anthrax had any association with this condition.¹ These questions were capable of being decided by experimental methods if such methods could be devised; and to Koch belongs the credit of elaborating techniques which provided not only the answers to problems already posed but to others which immediately arose. He managed to prepare a pure culture of the anthrax bacilli isolated from the blood, and by inoculating rabbits and mice with some of the culture and producing in them this condition, he proved for the first time that a micro-organism, which could be identified and cultivated, was the causative factor in the onset of a disease.

Experiments of the foregoing kind provided the basis for the famous "Koch's postulates," which lay down the conditions necessary before the causal relationship between an organism and a disease process can be logically demonstrated.

Koch's researches into the organisms associated with a group of diseases including pyæmia, septicæmia and erysipelas, were of importance in connection with surgery and gynæcology. These conditions, up to the time of Lister, had been the cause of myriads of deaths in hospitals after operations. Of all the researches with which the name of Koch is associated that relating to the discovery of the tubercle bacillus is the most famous and most important. Although the proof that this disease is caused by a specific organism is due to Koch, tuberculosis had been regarded as an infectious disease by a number of observers during the preceding twenty years. The announcement of the discovery of the tubercle bacillus was first made in 1882, at a meeting of the Physiological Society in Berlin. Koch's tuberculin, obtained from a glycerine extract of a culture of the bacillus, was announced at the International Medical Congress held at Berlin in 1890.

The interest shown by the world in this discovery of the tubercle bacillus was immense, as the disease was at that time widely distributed in all countries and throughout all sections of society. Many congresses were held at which the subject was discussed in all its bearings. Koch published in 1884 a paper on the *Ætiology of Tuberculosis* which contained an account of his views

¹ Pollender had observed his bacillus in the blood of cows dying from anthrax (1849); and Cohn had discovered sporulation in certain micro-organisms, including anthrax, in 1857.

on the methods which should be adopted to prevent the spread of the disease. Between 1882 and 1884 he had visited Egypt and had isolated the causative organisms of cholera and amœbic dysentery.¹

Further Progress in Bacteriology

By 1884 the causative organisms of several infectious diseases had been isolated and, what was almost equally important, methods of culture and of staining had begun to be elaborated. The progress of bacteriology during the next few years was to be in the direction of the isolation of more of the commoner organisms, the discovery of other culture media and other methods of staining, and the perfecting of sero-diagnostic tests. Of Pasteur's assistants, Émile Roux improved the preparation of anti-diphtheritic serum originally discovered by von Behring, and Metchnikoff elaborated his theories of cellular immunity in connection with infectious diseases.² Von Behring, one of Koch's assistants, discovered the principles underlying the treatment of communicable diseases by anti-serum and his diphtheria antitoxin, produced in 1890, has been the means of markedly reducing the death rate from this disease. Kitasato discovered the plague bacillus in 1894³ and von Behring and Kitasato jointly succeeded in producing tetanus antitoxin. Loeffler first isolated the diphtheria bacillus and devised new methods of staining bacteria. Neisser discovered the gonococcus and Hansen the leprosy bacillus.

Bacteriology and the Public Health

These great discoveries, which profoundly influenced Public Health methods and, indeed, medicine generally, all took place within a space of time of less than twenty years. No longer had the Medical Officer of Health to work in the dark when confronted with an outbreak of cholera, typhoid or diphtheria; but he could, by the use of the new bacteriological methods, isolate and identify the organism and thus make certain, early in the epidemic, of the diagnosis. But, very soon, bacteriological methods became sufficiently refined to enable the sanitarian to trace the passage of the organism, through the various stages, from a person suffering from a communicable disease to another person. In the course of a

¹ The organism producing cholera has been called the "*comma bacillus of Koch*." It is usually referred to now as the cholera vibrio. The parasite causing amœbic dysentery is called *Entamœba histolytica*.

² See Élie Metchnikoff's *Immunity in Infectious Diseases* (trans. from French), 1905.

³ Also discovered independently by Yersin.

few years the general mode of the transmission of some of the infectious diseases was discovered, not as a theory deduced from inferences as to the behaviour of the diseases, but as a precise scientific fact. Snow and Budd, for example, between 1849 and 1854, by observing the courses of the two cholera outbreaks, made deductions in regard to the methods of spread of this disease which were completely accurate. In the absence of the isolation of the actual organism their deductions, however well reasoned, were nevertheless theories rather than facts and did not command universal acceptance. Both Simon and the General Board of Health were, even after 1854, chary of accepting Snow's views and the former displayed interest in Pettenkofer's theories about ground water levels as late as 1866.



DEATHS FROM ENTERIC FEVER PER MILLION PERSONS LIVING IN ENGLAND & WALES

FIG. I

Once the precise mode of transmission of an infectious disease has been established, methods may be discovered whereby the organism can be prevented, at some stage, from passing from an infected to a healthy person. The methods used by the Public Health Service to prevent the transmission of infection from one person to another depend upon the natural habits of the organism. When, for example, it is known that cholera and typhoid are mainly carried from one person to others through the agency of water, it is theoretically possible to prevent the spread of these diseases by ensuring that the excreta from infected persons do not contaminate the supplies. But this, though theoretically possible, may be difficult if the only sources of water are infected wells or a river contaminated with sewage. To render water wholesome, in such circumstances, may involve large expenditure in obtaining alternative sources of supply or in purifying the water by storage, chlorination or in other ways. Sometimes, as in the case of diphtheria or scarlet fever, the disease is conveyed directly from one person to another, and, in such circumstances, it is impossible to prevent completely the transmission of infection. Two methods of prevention may be adopted in such cases: (i) the isolation of the patient, and (ii) the immunisation, by appropriate methods, of all susceptible persons. The second method, will be discussed in a later chapter. The first method—that of isolation—leads to a discussion of fever hospital policy which in its modern form, may be said to date from the Public Health Act, 1875.

Fever Hospitals

The first fever hospitals in this country were established in Norman times for the treatment of leprosy, but, as leprosy declined, some were used for patients suffering from other diseases of an infectious type. Up to the early part of the nineteenth century it was customary to nurse fever patients, including even those suffering from smallpox, in the general wards of hospitals, the prevalent opinion amongst physicians being that it was safe to mix fever and other cases in the proportion of one to six. In the cholera epidemics in London of 1849 and 1854, for example, many persons suffering from this disease were admitted to St. Bartholomew's Hospital. By the middle of the century it had become the practice of general hospitals to segregate infectious cases in special wards.

The most famous of the fever hospitals was the London Fever Hospital, established in 1802 with the support of the parishes, which agreed to pay for the upkeep of patients admitted on the order of a relieving officer. Apart from the London Fever Hospital

there was at that time no special accommodation for persons suffering from infectious diseases, most of whom were nursed at home, and the remainder admitted to the wards of Poor Law Hospitals.¹ Under the provisions of the Metropolitan Poor Act, 1867, the Metropolitan Asylums Board was created and this body slowly began the creation of a fever hospital system for London.

Conditions were somewhat similar in the provinces where fever cases were admitted, as in London, to the wards of voluntary and Poor Law hospitals. In the cholera epidemics, general hospital accommodation was only sufficient to house a fraction of the cases and the remainder were either treated at home or admitted to temporary hospitals. At Liverpool, in the 1849 cholera outbreak, less than 1,000 out of 10,000 cases were admitted to hospital.² One of the provisions of the Sanitary Act, 1866, was that the Nuisance Authority in London and the Sewer Authority in the provinces might provide and maintain hospitals for infectious diseases; but this enactment was little used for this purpose as it was superseded by the Public Health Act, 1875, which laid it down that any local authority might provide for the use of the inhabitants of their district hospitals or temporary places for the reception of the sick.³ Although the Act refers to "hospitals" and not to "fever hospitals" this power was used only in the limited sense of applying to the latter class of hospitals and under the section many came into being during the next fifty years. Some were termed "isolation" hospitals on the ground that their principal function was to reduce the number of persons infected from a case by removing the sick person to hospital. This would certainly be true in connection with such diseases as cholera and typhoid where the patient is infectious for a long period, but methods of isolation were found as a result of experience to be less effective in the case of persons suffering from scarlet fever, diphtheria or measles where the period of maximum infectivity is during the first two or three days, and usually before the patient can be removed to hospital. Moreover, the theory on which isolation hospitals were first based did not take account of the existence of "carriers" in whom the duration of the period of infectivity may be weeks or years, or of cases so mild that they are not diagnosed.

As time went on it was realised that the system of isolation

¹ *A Handbook for London*, published in 1849, describes the London Fever Hospital as being instituted for the gratuitous admission of all poor persons (not being parochial paupers) and domestic servants of subscribers labouring under contagious fever.

² *Duncan of Liverpool*, p. 69.

³ Section 131.

hospitals was not fulfilling the purpose for which it was designed, namely, the reduction in the general incidence of fevers, and these institutions came more and more to be regarded as places for the specialised treatment of all kinds of infectious diseases. The efforts of the Public Health Service to combat infectious disease were aided by the passage of the Infectious Disease Notification Act, 1889, and the Infectious Disease Notification (Extension) Act, 1899. The first named Act, which could be adopted by such local authorities as thought fit, made it necessary for a practitioner to notify to the local Medical Officer of Health cases of certain infectious diseases, and the Extension Act made notification compulsory throughout the country. Some local authorities had, before 1889, adopted the method of voluntary notification.

The Beginnings of Bio-Chemistry

Bio-chemistry arose out of the older science of Physiology which had been studied since the Middle Ages both in England and on the Continent.¹ The study of the chemical processes going on in the human body, which are of great complexity, appears to have been initiated in England by Dr. William Prout (1785–1850) of Guy's Hospital,² but the science made great progress during the period from 1864 to 1882 owing to the researches of [Dr. John William Thudichum (1829–1901) who was encouraged in this work by Simon. Simon's reports to the Privy Council, and later to the Local Government Board, contain full accounts of the researches conducted by Thudichum at his private laboratory in Kensington. "After lecturing on chemistry at the Grosvenor Place School of Medicine, in 1865 he became lecturer in Pathological Chemistry at St. Thomas's Hospital and Director of the newly founded chemical and pathological laboratory there. His studies on changes produced by disease in the chemical actions of the body attracted Simon's attention. . . ."³ Aided by Government subsidies Thudichum made fundamental contributions to the chemistry of the pigments of urine, bile and blood and he laid the foundations of our present knowledge of the chemistry of the brain. Scientifically his work was of a most important character, and it is little to the credit of British medicine that it was not recognised as such until after Thudichum's death in 1901.

¹ One of the earliest to study chemical physiology was Franciscus Sylvius (1614–72) of Leyden.

² Prout published in 1821 *Enquiry into the Nature and Treatment of Gravel, Calculus and Other Diseases*.

³ MacNalty, Sir Arthur S., *The History of State Medicine in England*, Fitzpatrick Lecture, 1946.

The important fact about this association between a Government Department and a laboratory worker was that it established the principle that it was desirable for the State to subsidise medical research in the interests of Public Health, and the founding of the Medical Research Committee in 1913 is an extension of this idea. On the Continent the science of chemical physiology was advanced by the work of Justus von Liebig (1803–73), one of the greatest of the German chemists, to whose laboratory at Giessen flocked such men as Pettenkofer, Fuchs and Bischoff to whose work on metabolism we owe some of our fundamental knowledge of the physiology of the human body. Pettenkofer, Liebig's most brilliant pupil, was the first to obtain hippuric acid from urine, and to discover creatine.

Researches into diseases of metabolism, particularly into the nature of diabetes, proved the most important stimulus to the study of bio-chemistry during the latter part of the nineteenth century and led finally to the discovery of insulin by Banting and Best in 1922.¹ Modern developments in bio-chemistry are outside the scope of this book, and it will be sufficient here to indicate the effect discoveries in this subject had upon the immediate progress both of the science and art of medicine. The science of medicine was advanced by the light which this newly-developed branch of knowledge began to shed upon the chemical functions of the stomach, the liver and the kidneys and the glands, such as the pancreas, associated with the working of these organs. Later bio-chemical discoveries, rendered possible by the researches of the nineteenth century physiologists, were to make clearer to us the mechanisms of the ductless glands such as the thyroid, the pituitary, and the suprarenals, to assist in the understanding of the complex diseases associated with these organs and to pave the way for the modern triumphs of chemotherapy. Diagnosis, as one of the arts of medicine, was to be assisted by the introduction of a series of tests, almost as by-products of the course of bio-chemical investigation, which were to be of great service to the medical practitioner in the early detection of disease.

Antiseptic and Aseptic Surgery

The early discoveries of the bacteriologists led directly to the introduction of the methods of antiseptic surgery with which the name of Lord Lister will always be associated. In a previous chapter mention was made of the investigation of the conditions in hospitals in the British Isles which was made by Dr. Bristowe and Mr. Holmes

¹ Much research was done into the nature of diabetes by Naunyn, von Noorden and Pavy.

at the instance of Simon, the Medical Officer of the Privy Council. The report of these investigators revealed very clearly the great mortality in British hospitals occasioned by sepsis. Septicæmia, pyæmia and erysipelas, due to infection by septic organisms, were rampant in all hospitals, in many of which even the elementary principles of ordinary cleanliness were not observed. There were, before the time of Lister's great discovery, many brilliant minds in the medical professions of all nations engaged in attempts to find some methods of reducing the heart-breaking mortality which attended not only surgical operations but also the practice of midwifery in hospitals. Oliver Wendell Holmes (1809-94), better known as the author of the *Autocrat at the Breakfast Table*, but also a competent medical practitioner and a brilliant scientific thinker, pronounced his belief that puerperal fever was due to infection brought by the hands of the patient's attendants, to a sceptical American public. "He lived to see his thesis proved and his name upon the roll of worthies in that profession through which he had been, in a sense, but a transient traveller."¹

But it is to the ill-fated Semmelweiss that we owe the beginnings of our deliverance from serious epidemics of puerperal fever. Ignaz Phillip Semmelweiss (1815-65) was appointed assistant professor at the Women's Clinic at the Allgemeine Krankenhaus in Vienna in 1846. Professor Klein was the head of the First Division which was used for teaching medical students while the Second Division, used for the training of midwives, was under the direction of Professor Bartsch. Figures for the six years from 1841 to 1846 showed that in the First Division one woman in every eleven had died and in the Second Division one in twenty-nine. "Almost any night in the great wards one might see a dying woman lying upon her bed of straw and beside her the priest, his eyes and forehead scarcely visible beneath his cowl, with his candles and his crucifix, while from the unlighted distances of the room came the muffled sounds of other women muttering in delirium. Not only at night but by day was heard the sound of bells as the priests administered the last Sacraments to the dying."² Patients pleaded to be admitted to the Second Division where they were treated by midwives. Semmelweiss found that the death rate from puerperal fever was low in cases attended by midwives and high when patients were examined by medical students who had come from the post-mortem rooms; and his conviction as to the cause of the high puerperal mortality in the First Division was strengthened when he observed

¹ Irving, Frederick C., *Safe Deliverance*, pp. 152-3.

² *Ibid.*, p. 153.



BACTERIOLOGICAL SECTION INTERNATIONAL CONGRESS OF HYGIENE AND

DEMOGRAPHY, 1891

Lehmann <i>Wuzburg</i>	Bardach <i>Odessa</i>	Adami <i>Cambridge</i>	Nocard <i>Paris</i>	Watson Cheyne <i>London</i>	Cartwright Wood <i>London</i>	Frankland <i>Dundee</i>	Cunningham <i>Calcutta</i>	Sherrington <i>London</i>
Buchner <i>Munich</i>	Gruber <i>Vienna</i>	Hankin <i>Cambridge</i>	Hueppe <i>Prague</i>	Metchnikoff <i>Paris</i>	Kitasato <i>Tokyo</i>	Fraenkel <i>Konigsberg</i>	Ruffer <i>London</i>	Hunter <i>London</i>
Roux <i>Paris</i>	Burdon-Sanderson <i>Oxford</i>	Lister <i>London</i>	Arloing <i>Lyons</i>	Fodor <i>Budapest</i>				

that the lesions in the body of his friend Kolletscha, who had died from a septic infection, were similar to those found in women dying of puerperal fever. It was evident to Semmelweiss that infection was carried by the hands of students from bodies in the dissecting rooms to the wards, where they passed it on to women in labour. He therefore gave instructions that students examining such women should wash their hands in chloride of lime solution; and the death rate fell from one in eight to one in thirty-three, and, as precautions were tightened, to one in seventy-nine. Semmelweiss's ideas were bitterly opposed by some of the medical profession of his day and he suffered many failures and disappointments, dying in the Vienna Hospital for the Insane in 1865.

It is not all pioneers in medicine who suffer the fate of Semmelweiss, and Lord Lister (1827–1912), who introduced methods of antiseptics which were to produce a revolution in surgery, obtained the full rewards of his discoveries, including the approval and acclaim of his own profession. Lister became Regius Professor of Surgery in Glasgow University in 1860 where his attention was called to the researches of Pasteur on fermentation by Professor Anderson. The resemblance between putrefaction in a wound and the processes of fermentation as explained by Pasteur seemed to Lister to be close, and he conceived the idea of destroying the organisms by the use of a strong antiseptic such as carbolic acid. “Of the three methods available for ridding the air of its germs:—heat, filtration and treatment by a chemical antiseptic, he chose the last, as the other two did not, at the moment, appear to be practically applicable.”¹ This method was used for the first time in his wards at the Glasgow Royal Infirmary in 1865 and there followed a succession of operations in which all the old evils of infection had been avoided. “His wards in the Glasgow Royal Infirmary had become the healthiest in the world.”² In 1869 Lister was appointed to the chair of Clinical Surgery at Edinburgh University. Although his methods had been regarded as successful in many quarters in England and Scotland they were not in use in the German Army during the war with France in 1870 and the operational mortality in amputations was appallingly high. Some of the most famous of the German surgeons recorded one hundred per cent. of failures in lower limb amputations, and septicæmia, pyæmia and gangrene ran riot throughout both the German and the French military hospitals. Von Nussbaum, who had seen the full horrors of hospital gangrene during operations on the wounded during the war, faced almost

¹ Godlee, Sir Rickman J., *Lord Lister*, p. 182.

² Libby, Walter, *History of Medicine*, p. 345.

equally grave problems when he became director of the Allgemeine Krankenhaus at Munich. He appealed to Lister and introduced his methods, with the result that sepsis of the kind previously experienced was banished from his hospital and, in the years which followed, from the hospitals in other parts of Germany. Lister, who became Professor of Clinical Surgery at King's College, London, in 1877, lived to see his methods, in some respects improved, adopted in surgical operating theatres all over the world.

Specialism in Medicine

The coming of specialism denotes a stage in the progress of the science and art of medicine when the boundaries of knowledge have become so widely extended that no single individual can embrace them. Early specialisation occurred when medicine on the one hand and surgery on the other began to be practised by different types of people—the physician, a reputable professional man with a Royal College to look up to, and the surgeon who was a craftsman with, for centuries, no professional status. The fact that the Royal College of Physicians was founded as early as 1518 and the Royal College of Surgeons not until 1800 is a clear indication of the earlier difference in status between what are now two equal branches of the same profession. Specialisation of the modern type arose as a result of outstanding advances in all fields of medicine during the second half of the nineteenth century. The discovery of anæsthetics and the introduction of antiseptic and aseptic methods in the operating theatre had established the surgeon as the full professional equal of the physician. He was accorded the same social status and regarded as the fitting recipient of the same kinds of honours. Thus, many of the surgeons practising in the later years of the nineteenth century, such as Ferguson,¹ Paget,² Hutchinson³ and Treves⁴, received knighthoods and baronetcies, and the great Joseph Lister became the first medical peer. The new science of bacteriology, and advances in chemical physiology added as much to the armentarium of the physician as did anæsthetics and antiseptics to that of the surgeon. But there were developing branches of medical knowledge which did not owe entire allegiance to the pure physician or to the surgeon. The study of diseases of the

¹ Sir William Ferguson (1808–77), Professor of Surgery at King's College Hospital, London.

² Sir James Paget (1814–99), Surgeon to St. Bartholomew's Hospital. One of the greatest names in nineteenth century medicine.

³ Sir Jonathan Hutchinson (1828–1913), Surgeon to the London Hospital.

⁴ Sir Frederick Treves (1853–1923), a famous abdominal surgeon, who operated on King Edward VII for appendicitis in 1902.

heart—cardiology—was advanced by the work of His, Waller and Sir James Mackenzie. Mackenzie's career is a romance in itself. Up to the age of fifty-four he was a general practitioner in Burnley, where he studied irregularities of the pulse and heart murmurs and came to the conclusion, after years of investigation, that the main subject for consideration in heart disease was the condition of the myocardium. Sir James Mackenzie, late in life, migrated to London and was appointed to the staff of the London Hospital. He died in 1925 from angina pectoris, a disease of the heart on which he was an authority.

Neurology owes much to the work of Romberg of Berlin, Erb of Heidelberg and Duchenne of Paris. Duchenne (1806–75) wrote *Physiologie des Mouvements*, and described for the first time locomotor ataxia, progressive muscular atrophy and other diseases of the nervous system. One of the greatest of the pioneers of modern neurology in Great Britain was Hughlings Jackson (1834–1911) who became a physician to the London Hospital and whose work on the localisation of brain lesions made him famous. (See p. 98.)

Mention should also be made of Joseph Skoda (1805–81) of Vienna, who published observations on his investigations into diseases of the chest and the methods of percussion and auscultation; and of Carl Wunderlich (1815–77), of Leipzig, who introduced the temperature chart.¹

The Study of the Mind

Nothing is more impressive in the history of medicine than the advances which were made in our knowledge of the mental processes, both normal and abnormal, during the latter part of the nineteenth century. Associated with fundamental discoveries during that period into the nature of the mind was a galaxy of brilliant thinkers whose names will always command the respect due to the pioneers in any important branch of human knowledge. There were men in this country during the century who had made advances in the treatment of insane persons, such as Conolly at Hanwell Asylum and Tuke, who founded the Retreat at York; but the more fundamental discoveries as to the nature of mental processes were made by Continental psychiatrists of whom the most famous were Kraepelin, Freud, Adler and Jung. Charcot, the neurologist, who from the nature of his work, was interested in psychiatry, regarded mental phenomena such as hysteria as arising from purely physiological causes and capable, therefore, of being treated by the ordinary traditional methods of medicine. Sigmund Freud (1856–

¹ Sigerist, H. E., *Great Doctors*, p. 520.

1939), who spent most of his working life in Vienna, owed something to Pierre Janet, a pupil of Charcot who paid special attention to the influence of memories of psychical trauma in the production of hysteria.¹ Freud, as did the other psychiatrists, postulated the "subconscious mind," but while he regarded the basic psychic impulse as the sexual instinct, Adler held the view that it was a blind and unrecognised "will to power". Adler's greatest contribution to psychology and psychiatry, however, lay in his conception that individuals do not form their unconscious memories all around the same central motive; in each case there is an individual way of selecting experience from all possible experience.² This conception forms the basis of Adler's system of Individual Psychology. Adler, himself, explains the principles underlying Individual Psychology in the following way: "The science of Individual Psychology developed out of the effort to understand that mysterious creative power of life—that power which expresses itself in the desire to develop, to strive and to achieve—and even to compensate for defeats in one direction by striving for success in another. This power is *teleological*—it expresses itself in the striving after a goal, and in this striving every bodily and psychic movement is made to co-operate. It is thus absurd to study bodily movements and mental conditions abstractly without relation to an individual whole."³ Adler thought that the fixing of an individual's goal in life took place in childhood, and that, from that time onwards, the line of direction is established and the person becomes definitely oriented.⁴

Jung who worked at the psychiatric clinic of the University of Zurich came into prominence through his work on word-association. This method consists in ascertaining an individual's verbal reactions to a series of test words. But it is to Jung's theories of psychological types and the collective unconscious that he owes his reputation. He considered that Freud's theory of the exclusively sexual origin of psychopathic conditions and Adler's concept of the "will to power" were one-sided⁵, and, accordingly, any attempt to treat a psychoneurotic patient by methods derived only from one of these theories might fail unless the person treated happened to fall into the appropriate category. Jung therefore attempted to classify individuals according to their psychological types. His well-known terms "introvert" and "extrovert" are part of this classification.

¹ Culpin, Millais, *Recent Advances in the Study of Psychoneuroses*, p. 5.

² Adler's *The Science of Living*, Introduction by Phillipe Mairat, p. 11.

³ Adler, Alfred, *The Science of Living*, p. 32.

⁴ *Ibid.*, p. 35.

⁵ Culpin Millais, *Recent Advances in the Study of the Psychoneuroses*, p. 253 (Chapter on the Critique of Analytical Psychology by James C. Young).

Kraepelin (1855–1926) of Munich spent much of his time in classifying mental diseases and it is to him that we owe the two main divisions of these diseases—the manic-depressive psychoses and dementia præcox.

Other Special Subjects

A number of other specialisms in medicine, whose beginnings date from discoveries made in the nineteenth century, deserve mention. Some, and especially ophthalmology and pædiatrics, become of importance in connection with developments in Public Health during the next century. The invention of the ophthalmoscope by Helmholtz in 1851 may be regarded as the starting point in specialisation in connection with diseases of the eye. Thomas Young discovered the function of the ciliary muscle in regard to accommodation and Franz Cornelius Donders of Utrecht elucidated the physical laws governing refraction of light through the lens of the eye to the retina. Albert von Graefe of Berlin, the discoverer of the sign in exophthalmic goitre which bears his name, was one of the pioneers in the modern surgery of the eye, and devised operations for glaucoma and cataract.

In pædiatrics much of the progress which took place during the nineteenth century was due to consultants who were associated with the Hospital for Sick Children, Great Ormond Street, founded in 1852. Two of these were Charles West (1816–98) and George Frederick Still (1868–1941), who gave his name to a type of rheumatoid arthritis in children.

The science of radiology had its birth when Wilhelm Conrad Roentgen (1845–1923) discovered “X-rays” in 1895. This new diagnostic agent was first applied to fractures and opaque foreign bodies, but as the years went by and the power of the sets increased, the usefulness of X-rays, not only for diagnosis but for treatment, was much enlarged. Deep X-ray therapy, for example, in connection with cancer has within recent years come much into use.

Niels Ryberg Finsen (1860–1904) was a pioneer in the use of ultra-violet light for the treatment of skin diseases and the Finsen lamp is much used in connection with lupus. Pierre Curie and Marie Curie isolated the element radium in 1898, and this discovery led to entirely new conceptions as to the constitution of matter. Radium has been found of great value in the treatment of cancer.

One of the most important of the many results which followed from the discoveries briefly described in this chapter was their effect upon the attitude of mind of medical practitioners towards disease. Hitherto disease both of the body and of the mind had seemed a

mysterious process being, like the wind which bloweth where it listeth, unpredictable and unexplainable. It is true that many great minds in medicine from Harvey and Sydenham to Koch and Lister had recognised that the key which would in time unlock the secrets of the morbid processes was knowledge of the human body and of the parasites which prey upon it; but to the generality of the profession disease was something which could not be precisely understood in the same way as some of the other phenomena of nature, and this led to an attitude of mind which was the reverse of scientific, being compounded of credulity, superstition and traditionalism. Up to the last quarter of the nineteenth century there were few branches of human knowledge so devoid of an accurate basis of facts as medicine, both in regard to its application to the treatment of disease and to its prevention. The medical scientists of the later part of the nineteenth century had shown, in a limited field, that disease was due to natural causes and could be prevented or treated by natural means. It did not take the rank and file of the medical profession long to realise that if certain types of diseases were capable of rational explanation, other diseases, the origins of which were still obscure, might be understood if sufficient time and energy were devoted to research. The gift which the medical scientists bequeathed to those who followed them was not so much the discoveries associated with their names—valuable as these discoveries were—as the proof of the fact that health and disease were the effects of natural causes, and that these causes could be elucidated by the use of the ordinary principles of scientific investigation. It was wholly to the advantage of medicine, both personal and communal, that the human body was beginning to be regarded, not as something esoteric or mysterious into the secrets of which it was impious to pry, but merely as an exceedingly difficult and complex scientific problem which could be more fully understood as methods of research became perfected. When the twentieth century dawned there was, in consequence of the work of the scientists in the Victorian era, and their predecessors, a new outlook on medicine and Public Health. Men recognised that the triumphs of the past were no more than a beginning. There were still new worlds to conquer both in the region of the body and of the mind.

CHAPTER 4

THE EPIDEMIC SITUATION DURING THE LAST THREE DECADES OF THE NINETEENTH CENTURY

The Public Health Service in this country came into existence as a result of the stimulus produced by the fear of epidemics and, for many years, the success of the movement for sanitary reform was estimated by its ability to reduce the number of cases of such severe infectious diseases as cholera, typhus, typhoid, dysentery and smallpox with their high mortality. At the outset, the sanitary reformers, ignorant of the methods of spread of any of the infectious diseases, claimed that efficient measures of general sanitation would be adequate and sufficient to prevent outbreaks of all these diseases. It was not until towards the end of the century that scientific discoveries made it clear that sanitary measures were effective against infectious diseases of intestinal origin but less effective, or not effective at all, against the contagia of diseases arising in other ways. The common opinion, which has lasted up to the present day, that diphtheria and scarlet fever are due to the smells arising from defective drains or sewers, dates from the middle years of last century before the mode of propagation of any of the infectious diseases was accurately known.

Apart from sanitary measures and isolation, the only method available for the purpose of preventing infectious diseases was vaccination against smallpox and this weapon of defence was, on the whole, intelligently and adequately used. The fight against this deadly and disfiguring disease lasted for many years and it was not, indeed, until the twentieth century that smallpox, in its endemic form, disappeared from this country. During the whole of the nineteenth century it was present in all urban communities, appearing from time to time in the form of severe epidemics. The fact that this disease had susceptible human material to attack was due to two causes:—(i) that protection afforded by vaccination in infancy wore off with the passage of years, and (ii) that a certain percentage of the population, increasing as the end of the century drew near, were not vaccinated at all owing to the growing objection to this method stimulated by the skilful propaganda of the anti-vaccination societies. In addition to endemic foci of smallpox which frequently served as the originators of extensive epidemics, there was continually present the danger of the importation of this disease from abroad. The system of quarantine had broken down

and the new port sanitary authorities had too little experience to constitute a completely effective barrier to the admission of cases of smallpox or other infectious diseases into the country. A port sanitary authority is, at best, merely the first line of defence. It cannot prevent the admission of persons in the incubation period of one of the infectious diseases and it must therefore depend on the backing of an efficient sanitary organisation throughout the rest of the country. This was not available during the seventh and eighth decades of the nineteenth century. The sanitary organisation throughout England did not attain the required standards of efficiency in all areas until much later.

In the domain of infectious diseases the sanitarians at this period had to contend with formidable difficulties and one of the most important of these was the presence, on the continent of Europe, of large areas containing populations which were living under conditions of squalor and misery much worse than any to be found in this country. To a trading community, having extensive contacts with countries whose sanitary standards were much lower than our own, the danger of the importation of cases of infectious diseases was continually present, and a number of serious epidemics arose in that way.

The main infectious diseases, continually present in this country in endemic or epidemic form, were, during the period under discussion, smallpox, typhus, dysentery, typhoid, diphtheria and scarlet fever. All had a high mortality rate and all received much attention in the annual reports of the Local Government Board. Cholera, in England, rarely and only for limited periods became endemic. The severe outbreaks of cholera which occurred on four occasions during the century formed part of world pandemics, and in the intervening periods the country was free from the disease except for small outbreaks arising from imported cases. Except for cholera, all the zymotic diseases mentioned above were continually present and they were one of the main causes of the high mortality which, as we have seen (p. 127), continued to be an intractable problem until late in the century.

For the sake of clarity it may be well to divide the infectious diseases discussed in this section according to their method of spread, either directly or indirectly, from one person to another, distinguishing those normally conveyed by the intestinal excretions from others spread by droplet infection in the saliva from the mouth. Infectious diseases arising in the intestine are transmitted by the agency of water or by foodstuffs or by utensils contaminated by infected water or, directly, by the patient. Examples of this

type of communicable disease are cholera, typhoid and dysentery.¹ Smallpox, diphtheria and scarlet fever,² on the other hand, are usually conveyed from the infected person to another by droplets from the mouth. It is not difficult to appreciate that sanitary measures might prevent the occurrence of epidemics of cholera, typhoid or dysentery caused by the admission of sewage to water supplies, thus confining the infection to the patient and his immediate contacts. Such measures, however effective in the case of infectious diseases of intestinal origin, are valueless when the infection is normally spread by droplets of saliva from the mouth of the patient. It is not surprising therefore that the successes of sanitary measures in reducing the incidence of infectious diseases were mainly confined to cholera, typhoid and dysentery, and that means of an entirely different character had to be employed to deal with scarlet fever, diphtheria and, as we have seen, smallpox. Smallpox came early on the list of preventable diseases, while scarlet fever and diphtheria required an entirely different method of approach, which was not discovered until well into the twentieth century. During the period with which we are dealing scarlet fever was a disease of great severity with a high mortality rate, but early in the twentieth century it experienced a change in virulence, causing, in the greater proportion of cases, a mild illness and relatively few after effects.

Diphtheria was, at this time, spread fairly widely throughout the British Isles but it was a comparatively new disease in some localities. Thus Duncan, the Medical Officer of Health of Liverpool, writing in 1860, observes about diphtheria that "this disease, which made its first appearance in Liverpool (if it be a new disease) about three years ago, has not as yet assumed an epidemic character, the deaths having been, in the three years successively, 62, 65 and 58."³

The mortality from diphtheria had been much reduced by the introduction of an anti-serum, first produced by von Behring and used and improved by Roux of the Pasteur Institute. This diphtheria antitoxin was first produced in some quantity in 1894 and Roux used it in connection with several hundred cases in that year with highly successful results. It came into general use in 1895 and mortality rates arising from this disease began to decline. The first test on a large scale of the newly-discovered antitoxin was undertaken by Roux, Martin and Chaillou in connection with

¹ These diseases may also be spread by flies. Enteric fever includes typhoid and paratyphoid.

² But both scarlet fever and diphtheria may be conveyed in other ways, notably by milk.

³ *Duncan of Liverpool*, p. 99, note.

the *Hôpital des Enfants Malades* in Paris during the first half of the year 1894. Cases at the near-by *Hôpital Trousseau* were not treated with antitoxin and therefore could be regarded as acting as controls. Out of 448 cases treated at the *Hôpital des Enfants Malades* there was a case mortality of 24.5 per cent. whereas at the *Hôpital Trousseau*, out of 520 cases of diphtheria, the corresponding figure was 60 per cent. The experience of the Metropolitan Asylums Board in connection with the use of antitoxin was also highly favourable. During the period up to the end of 1894 the case mortality of diphtheria in the Board's fever hospitals was about 30 per cent. After the introduction of antitoxin in 1895 the case mortality in these hospitals began to decline until in 1899 it had dropped to 13.95 per cent. In the case of patients treated in the first and second days of the disease the reduction in mortality was still more striking.

Much discussion took place at that time on the subject of the precise action of antitoxin in neutralising the effects of the diphtheria toxin in the body. Ehrlich considered that toxin and antitoxin combined in the body in a way resembling the reaction between a strong acid and a strong base. This is a simple explanation of the toxin-antitoxin reaction and it is attractive because of its simplicity. But there is much evidence that the reaction between toxin and antitoxin is, at least in the early stages of combination, reversible, whereas that between a strong acid and a strong base is irreversible.¹ Ehrlich's theories were, however, based upon a large mass of experimental evidence which embraced not only the reactions between toxin and antitoxin but the general principles governing immunity against the attacks of parasitic organisms. One of the fundamental ideas put forward by Ehrlich was that the lethal action of a toxin and its antitoxin-combining power are two separate functions.² One of the atom groups of the toxin, called by Ehrlich the "haptophore," is concerned with its union with the appropriate antitoxin, whereas the other group—the "toxophore"—brings about the toxic action. Apart from affording an explanation of the action of antitoxin in destroying the lethal properties of the toxin, Ehrlich's experiments formed the basis of the method of standardisation of antitoxin.

Ehrlich's most important work in connection with immunity was the general theory which he advanced in 1897, fully supported by experimental data, that antibody production was due to damage done to the "side-chains" of some of the body cells by the haptophoric complex of the toxin uniting with them, and that the

¹ Stallybrass, C. O., *Principles of Epidemiology*, pp. 163-4.

² Bullock, W., *History of Bacteriology*, pp. 274-5.

response of these cells was in excess of that required for regeneration in accordance with Weigert's principle. This excess of specific side-chains was, in Ehrlich's view, cast off into the blood-stream and constituted antitoxin. This theory, which was not accepted by a number of scientists, including Bordet, Gruber and von Pirquet, was later extended to cover other types of antibodies including agglutinins, precipitins and lysins as well as antitoxins, and it postulated the presence of an "amboceptor" combining with the cell on the one hand and "complement" in the blood serum on the other.

Ehrlich's theories in regard to the mechanism of the processes of immunity met with acceptance in some quarters and opposition *à outrance* in others. During the earlier years of the twentieth century numerous attempts were made to explain the complicated phenomena involved in the production of immunity, notably Bordet's theory which depended upon adsorption. This problem is still unsolved, although much use is made by the bacteriologists of methods elaborated during the years when theories of the mechanism underlying the production of specific immunity against bacterial infections were being debated. It may, however, be said that the greatly increased knowledge of protein chemistry which has been acquired in recent years, especially in regard to enzymes, is extending our knowledge about the mode of production of acquired immunity, and the older theories are accordingly being revised.

It is proposed to devote the greater part of the remainder of this chapter to an account of some of the more serious epidemics which occurred in certain localities in this country between the years 1870 to 1900. The cholera epidemics taking place in 1848-9, 1853-4 and 1866 have been referred to in Part I, chapters 2 and 3; and these are of exceptional epidemiological interest because they were part of world pandemics of this disease and they affected concurrently many areas in the British Isles.

During the period between 1869 and 1874 cholera was widely prevalent throughout the world, appearing from time to time in Europe, but this country escaped any actual epidemic. According to Dr. J. Netten Radcliffe's account, which appeared in the annual report of the Medical Officer of the Local Government Board for 1875 (p. 139), numerous importations of this disease into England took place in 1873 but all, fortunately, proved sterile. The fact that no indigenous cases arose in that year in spite of infected ships

landing patients into London, Southampton and Liverpool, is a plain proof that the new Port Sanitary Authorities were carrying out their duties with a satisfactory degree of efficiency. From time to time, during the years which followed, cases were occasionally found on ships reaching the various ports, but no outbreaks of cholera occurred in this country between the years 1866 and 1893.

In the latter year cholera, which had become widely diffused along the pilgrim routes to Mecca and in Arabia, Persia, Mesopotamia and Asiatic Turkey, crossed to Europe and became widespread in Russia, Italy, Austria, Germany and France. Notwithstanding the prevalence of the disease at Continental ports having trade with this country only 13 cases of cholera or suspected cholera arrived by ship. On this occasion the arrangements at the ports proved insufficient to prevent the ingress of cases. These cases entered the country by way of London, Liverpool, Cardiff, Grimsby, Southampton, and the Rivers Tyne and Blyth, the reputed sources of infection being mainly Russian and French ports. This distribution of cases produced a large number of small outbreaks of cholera in Lincolnshire, Lancashire, Yorkshire, Derbyshire, the county of London and other places. That the outbreaks were of small dimensions is shown by the fact that in only five areas—Grimsby, Kingston-upon-Hull, Ashbourne, Cleethorpe-with-Thrunscoe and Great Clacton—did the number of cases exceed 10. Altogether, the total number of persons attacked with illness deemed to be cholera in England in 1893 was 287, and of these 135, or 47 per cent., died.¹

So ended the last of the cholera outbreaks in this country. For that occurring in 1831–2 there are no mortality statistics available. In the epidemic of 1848–9 there were 54,398 deaths, in 1853–4 24,516 deaths, in 1866 14,378 deaths and in 1893 (as mentioned above) 135.²

The epidemics which will be described in the following pages were, with one exception, of limited extent, affecting, as a rule, one locality and often caused by the failure of some sanitary precaution. Each epidemic was carefully investigated and in nearly every case the origin of the infecting agent was discovered. It was from the lessons learnt in the investigation of epidemics such as these that the medical staff of the Local Government Board and the Medical Officers of Health of local authorities built up a body of knowledge about the

¹ Annual Report of the Medical Officer of the Local Government Board, 1894–5, p. 343.

² *Ibid.*, p. xxii.

transmission of infectious diseases which, when systematised, constituted the science of epidemiology. The exception referred to above was the outbreak of smallpox which occurred in England in the years 1870–3, and this will be described first.

Smallpox Epidemic, 1870–3

This epidemic, which occurred throughout England from the end of 1870 to the close of the second quarter in 1873 was part of a world-diffused pandemic “marked by an intensity and malignancy unequalled by any previous epidemic of the disease within living memory.”¹ Dr. Seaton who investigated this outbreak on behalf of the Local Government Board refers to the extreme diffusiveness of the disease, to the way it attacked an unusual proportion of persons who were regarded as protected against it either by previous smallpox or by vaccination, and to the occurrence of a large number of cases of a malignant and hæmorrhagic type, causing a high case-mortality rate. This pandemic of smallpox, probably the worst in history, had its origin in France in 1869 and by the end of 1870 had spread throughout the whole of that country. It then appeared in London, in some of the towns in Holland, in Milan and Geneva, and became rapidly diffused over the whole of Europe during 1871 and 1872.

This epidemic was anticipated in this country, for the preceding outbreak of smallpox had terminated at the end of 1866 and already in 1870, England had been free from an undue prevalence of the disease for a longer period than usual. The close of the year 1869, however, saw a gradual rise in smallpox mortality—the invariable precursor of an epidemic—and this afforded the Privy Council the opportunity to issue a warning to negligent Boards of Guardians in the Metropolis to become more diligent in the performance of their duties under the Vaccination Act, 1867. During the first quarter of the year 1870 the number of deaths from smallpox in England was 405; during the second quarter 446; during the third 500; and during the fourth 1,229. The epidemic struck first at London and Liverpool and these two towns together contributed 879 to the 1,229 smallpox deaths which occurred during the last quarter of 1870; the outbreak then invaded the mining districts in the North of England and parts of South Wales. By the second quarter of 1871 the epidemic had extended to practically the whole of the country. Altogether, from the last quarter of 1870 to the end of the first quarter in 1873, when the outbreak terminated, the

¹ Annual Report of Medical Officer of the Local Government Board, 1874, p. 51.

number of deaths from smallpox in England was 44,079, out of which 10,287 were contributed by London.¹ In truth, the Angel of Death was abroad in the land in those years.

This epidemic of smallpox was outstanding among the many which had occurred since vaccination became compulsory both on account of the total number of cases and the very heavy mortality. In the London Smallpox and Vaccination Hospital the case-mortality rates for the years 1870 and 1871 were, respectively, 66.2 and 77 per cent. in unvaccinated persons; and, in the two years combined, the rate amongst the vaccinated was 15 per cent. In Liverpool, the number of smallpox deaths in 1871 was 1,919, in Sunderland 850, in Newcastle-on-Tyne 695, and in Sheffield 406.

Dr. Seaton, who compiled this report for the Local Government Board, emphasises that, in spite of the severity of the smallpox outbreak of 1870-3, the country had been saved from something very much worse by the system of vaccination which had then been in force for 30 years; and he observes that the mortality of this epidemic, alarming as it had been, had not approached what was the *usual annual* smallpox mortality of the kingdom at the time when vaccination was unknown. "The average annual smallpox death rate of the metropolis in the pre-vaccine period was from 400 to 500 per hundred thousand of population; the mean annual death rate of this epidemic was 148, having in 1871 been 243 and in 1872 54.²"

The Vaccination Acts of 1867 and 1871 were at that time well administered by the majority of the Boards of Guardians under the general supervision of the Central Authority. After 1871 the organisation in each area consisted of a number of districts each under the charge of a Public Vaccinator, who was a general practitioner working under contract, and a Vaccination Officer whose duty it was to make the necessary arrangements. Until 1898, infant vaccination was compulsory except in the case of children who were certified as in such a condition of health that they were not fit to undergo this operation. Because of the continued prevalence of smallpox in endemic form all over the country, vaccination was regarded as of great importance and for many years the analysis of the vaccination returns occupied first place in the annual reports of the Medical Officers of the Local Government Board. The report on this subject for the year 1872

¹ Annual Report of the Medical Officer of the Local Government Board, 1874, p. 54. The average annual number of smallpox deaths in England from 1854-70, inclusive, was 3,493.

² *Ibid.*, p. 57.

is especially interesting because it relates to a period when the main stress of a serious smallpox epidemic was being experienced. The digest of the vaccination returns for the country prepared by Dr. Seaton for the annual report shows that out of 821,856 children born in that year,¹ 78,594 died before they could be vaccinated and, out of the surviving 743,262, 93.92 per cent. were successfully vaccinated, leaving 0.35 per cent. as either insusceptible to vaccination or having had smallpox and 5.72 per cent. as still to account for. Of the children not accounted for, some were cases where the state of the child's health led to the postponement of vaccination, others had been vaccinated successfully, but the certificate had not yet been received, while the remainder were either children registered under false names and addresses (often illegitimates) or those who from want of the proper machinery in certain areas had not been dealt with. As the appointment of Vaccination Officers by Boards of Guardians did not become compulsory until the passing of the Act of 1871,² the above results of the operation of the Vaccination Acts may be considered surprisingly satisfactory.

As a comparison it may be instructive to turn to the Annual Report for 1899–1900, which gives a digest of the returns for the year 1897. This report shows that out of a total of 927,518 children born in England and Wales in that year, of whom 823,506 survived, only 70.3 per cent. of those who survived were vaccinated.³ By this time smallpox was declining and the willingness of parents to allow their children to be vaccinated, so strikingly shown in the earlier years when the dangers to be apprehended from this disease were apparent to all, was not so evident. Moreover a way of escape from vaccination had been provided in the “Conscientious Objectors” clause contained in the Act of 1898—which allowed exemption if the parent satisfied two justices or a stipendiary magistrate that he conscientiously believed that vaccination would be prejudicial to the health of the child. There was a further relaxation in the Act of 1907 which made a declaration by the parent before one justice or a Commissioner for Oaths sufficient for the exemption of the child from vaccination.

The London Smallpox Hospital of this period—the successor to one at St. Pancras—had been built on Highgate Hill specially for

¹ In England and Wales.

² Under the Vaccination Act, 1867, Boards of Guardians were *empowered* to appoint Vaccination Officers.

³ Forty years later (1937) the percentage of “acceptance” (actually vaccinated) in relation to births, having fallen consistently over the intervening period, was only 34.0. This compares with the “acceptance” percentage, on the same basis of calculation, for 1897, of 67.7.

this purpose and it was first used for the admission of patients in 1850. In the 1870-3 smallpox epidemic the accommodation at the Highgate Hill Hospital was found insufficient and the Metropolitan Asylums Board opened emergency hospitals at Hampstead, Homerton and Stockwell. In 1877 another was founded at Fulham.

After 1871 the administration of the National Vaccine Establishment was in the hands of the Local Government Board. Calf lymph was used for the first time in this country at St. Mary Abbots, Kensington, being obtained from Holland; but it was not issued officially by the National Vaccine Establishment until 1881. Glycerinated calf lymph (glycerine used as a diluent) was obtainable in this country in 1883 but it was not the policy of the National Establishment to issue it until 1896-7. Monckton Copeman discovered that the glycerine exercised bactericidal effects upon the calf lymph and he announced this fact at the International Conference of Hygiene in 1891. The Royal Commission on Vaccination considered the subject from 1889-96 and the Vaccination Act, 1898, was the result of its labours. This Act authorised the supply of lymph free of charge to public vaccinators. One of the duties of the National Vaccine Establishment was to arrange for the opening of Educational Vaccination Stations for the instruction of medical practitioners in approved methods of vaccination, and these were gradually organised from 1860 onwards in London and the larger towns. The certificates thus obtained were required by any practitioners desiring to become public vaccinators.¹ This educational work in regard to vaccination is now performed by the medical schools.

The Maidstone Water-borne Epidemic of Enteric Fever, 1897

At the time of this classical outbreak Maidstone was a thriving market town with a population of 33,000 and a health record better than the average for the remainder of the country; and it obtained its water supplies from the springs situated on the banks of the River Medway above the town and from the Ewell and Tutsham springs in Farleigh East to the south-west of the town. Water from the latter source ran through a main which passed near a group of eight cottages, called the Mill Cottages, which were supplied from this main. The main effected a junction with the main from the Ewell spring and the combined supply passed to storage

¹ The facts in the last two paragraphs are obtained from an article *A Historical Note on the Prevention of Smallpox in England and the Foundation of the Government Lymph Establishment*, by J. R. Hutchinson, in the Annual Report of the Ministry of Health, 1946, pp. 119 *et seq.*

reservoirs and filter beds at the East Farleigh Works. On its way to the Works the main received water from some springs known as the South Eastern springs. Further supplies of water were obtained from springs at Cossington and Boarley in 1885.

In the year 1897 the upper parts of the town received their water from the Barming Reservoir into which water from the Farleigh works and some from the Cossington springs was pumped. Other parts of the town took their water supplies from Boarley and from Cossington direct.

On the 12th September, 1897, six notifications of enteric fever and on the following day seven were received. Day after day the number of notifications mounted up until, by the middle of November, the total had reached 1848. Thereafter the number of cases notified each week decreased and by the end of the epidemic the total number of notifications, including some from the Barming Asylum and from the Rural District adjoining Maidstone, was 1938. An investigation of the sources of the water brought to the Farleigh works showed that one of the Tutsham springs was only 50 yards from a most insanitary privy and that another was subject to potential contamination from a hop-pickers' camp near at hand. On the advice of the Deputy Medical Officer of Health the supply from the Tutsham springs was discontinued on September 20th, and a few days later the whole of the Farleigh supply was cut off except that from the Ewell and Big Church springs. In October, Dr. Sims Woodhead was asked by the Water Company to investigate the outbreak and the suggestion was made by him that the water should be treated with chloride of lime in order to sterilise the mains. This procedure of sterilising the mains, which took place on October 16th, was the first recorded.

In view of the distribution of cases in the Farleigh area of supply the Medical Officer of Health came to the conclusion that this epidemic of enteric fever was water-borne and that it originated by contamination of the Tutsham springs. The medical adviser to the Water Company, on the other hand, argued that the outbreak was due to the insanitary condition of the drainage system in the Farleigh area, which was the highest part of the town. Chemical examination of the various sections of the water supply on September 19th and the following days showed that albuminoid ammonia, nitrates and total solids (indicating organic contamination) were high in connection with the Tutsham-in-Field spring; that several of the South Eastern springs contained nitrates in excess; and that water from the Ewell and Big Church springs was normal. The bacteriological evidence substantially confirmed these findings.

It was not possible at that time to isolate the typhoid bacillus from water and a judgment as to the method of spread in this epidemic must be founded on the evidence as given in the Annual Report of the Medical Officer of the Local Government Board for 1897-8, pp. x *et seq.* Although the Medical Officer of Health had for years conducted analyses of the Maidstone water he did not consider it his duty to inspect its sources, and this attitude led him to neglect one method of satisfying himself that the supply was pure and wholesome. His representations to the Town Council in regard to the sanitation of his district, repeatedly made over a period of years, had not been acted upon, and there is the general impression that the Council had adopted a policy of false economy in matters of Public Health which, in the long run, cost them dear. There is no doubt that this epidemic was due to the contamination of the water by sewage and excreta, but it is by no means clear whether the Tutsham springs were the only sources of infection.

The Blackburn Water-borne Outbreak of Enteric Fever, 1881

The mortality returns in respect of "fever" during the period 1870-80 had shown a distinct tendency to decrease. The epidemic of 1881 commenced at the end of February and during March the number of cases reported was 149 while in April the number was 61 and in May, 28. The total number of cases of enteric fever in Blackburn in this small epidemic was therefore 238. As this outbreak was certainly due to infection of the water consumed in the town it will be desirable to consider the sources of supply. Water was obtained from wells and from a spring situated on the north side of the borough, the gathering ground for both being situated a few miles away and consisting mainly of pasture land. Water was brought to reservoirs at the village of Guide, two miles from Blackburn. At Guide there were two reservoirs, the newer of which, opened in 1859, was called the Fishmore Reservoir. The most important, for our purposes, of the wells which formed a subsidiary part of the supply of the town was the Revidge well which was about 200 feet deep.

There were several possible sources of pollution of the town's water supply, and the main gathering ground, the reservoirs and a culvert were situated near to dwellings from which some contamination could take place. In particular, it was possible, during periods of heavy rain, for surface contamination to be washed into the culvert bringing water from the Pickup Bank Reservoir to the Guide and Fishmore Reservoirs; and near the Revidge well there were a number of houses from which sewage might find its way through

the porous sandstone. The conclusion arrived at by the Medical Officer of the Local Government Board who investigated this outbreak is that it was probably due to contamination of the water brought from Pickup Bank to the two reservoirs at Guide; and this conclusion was confirmed by the fact that cases of enteric fever were reported in the two villages of Cherry Tree and Lower Darwen—both supplied from the Fishmore Reservoir.¹ This outbreak emphasises the lesson which the officials of the Local Government Board were continually attempting to teach local sanitary authorities at that time, namely, that economies which led to the danger of epidemics were inexcusably bad administration and a betrayal of the trust imposed in the members by their constituents. Many of the epidemics investigated during this period were traced to sanitary defects which could have been rectified at relatively small cost.

The two epidemics of water-borne enteric fever briefly described above are chosen out of the many which occurred in this country during the period from 1870–1900. Indeed, there are few reports of the Local Government Board during the first thirty years of its existence which do not contain details of one or more investigations into outbreaks of enteric fever, and these were almost always proved, or strongly suspected, to be occasioned by defects in the water supply either at the gathering grounds, the reservoirs, or during the course of its conveyance to the consumer. In many cases the sources of possible contamination were evident on even a casual inspection of the water undertaking and yet dangerous defects which could often be remedied without difficulty and at little expense were allowed to continue. One of the annual reports of the Local Government Board, for example, refers to outbreaks of enteric fever occurring in the City of Chichester in 1865, 1878, 1896 and 1897 which had been due to sanitary defects easily capable of remedy.² But there were very many similar cases.

There were, however, great difficulties in the way of ascertaining whether a particular water was polluted or not. From about the middle of the century attempts were made to enlist the aid of the chemists to ascertain the purity or otherwise of water-supplies, but Cory and others in 1881–2 produced evidence to show that comparatively satisfactory chemical results might be obtained in the

¹ Annual Report of the Medical Officer of the Local Government Board, 1881, pp. 74 *et seq.*

² Annual Report of the Medical Officer of the Local Government Board, 1899–1900, pp. 52–88.

presence of serious typhoid pollution. In the 'eighties, progress was made by Koch, Klein and other bacteriologists in the cultivation of organisms, and in elaborating methods for the estimation of the numbers of bacteria in water. At that time, however, there was little to choose between chemical and bacteriological methods of water examination.

By the end of the century the methods of the bacteriologists were beginning to show themselves to be more delicate and more certain in the analysis of water than those of the chemists. Klein and Houston (1898-9), by applying both bacteriological and chemical analysis to water experimentally contaminated with sewage proved that the former was many times more delicate than the latter. Houston continued his work on the bacteriological examination of water supplies for many years and his methods were accepted as the standard for water analysis in this and other countries. (For a list of some of the more important of Houston's papers, see p. 287).

The next epidemics to be described are of the same disease, spread in a different way. Enteric fever, transmitted by the agency of milk, causes an outbreak which is, as a rule, less widespread than when the disease is conveyed by water, and it presents an easier problem to the sanitarian, especially in regard to measures for ending the epidemic. A milk-borne epidemic of any disease is usually caused by the infection of the milk directly by a carrier or by contamination of utensils by polluted water. But this is not invariably so, as the Hendon outbreak showed. In most cases the mode of infection can be readily determined, to-day, by the use of modern serological and cultural methods; but it was far otherwise in 1873 when the St. Marylebone epidemic of enteric fever occurred.

The St. Marylebone Epidemic of Milk-borne Enteric Fever, 1873¹

This outbreak occurred in St. Marylebone, St. George's (Hanover Square) and Soho and the fact that it appeared to be connected with a particular dairy was brought to the notice of the Medical Officer of Health of St. Marylebone, Dr. Whitmore, by Dr. Murchison, the famous author of *The Continued Fevers of Great Britain* and a physician at the London Fever Hospital. The evidence against the dairy was very strong. Nearly all the households in which infection occurred had been customers of this firm, children, who are large consumers were mainly affected, and the sufferers had all partaken of milk supplied by this dairy. A survey of the farms

¹ Annual Report of the Medical Officer of the Local Government Board, 1873-4. See also Sir Harold Scott's *Some Notable Epidemics* for a very clear account of this and a number of other outbreaks between 1854 and 1933.

from which the supply was obtained showed that the circumstances of one in particular were such that it was highly likely that its milk was being heavily infected through polluted water which was being used to wash the utensils.

The officers of the Local Government Board deputed to deal with this inquiry were Dr. J. Netten Radcliffe and Dr. W. H. Power¹ and the course of the epidemic is described in their report. Their investigations showed that out of 191 cases during the first nine weeks of the epidemic, 167, or 87.4 per cent., were members of households which purchased milk from the suspected dairy. It was possible, however, to narrow down the inquiry still further. In one house the mistress and the maid drank milk from this dairy in the raw state and both fell ill with enteric fever; the two children, who only partook of the milk when boiled, remained free from the disease. A clerk, living with his parents who patronised another dairy, used milk from the suspected dairy while at work and contracted enteric; the parents remained well. In another house a child and a servant who was said to be a great milk drinker were the only ones attacked; and in yet another case mentioned in the report, in a family of three children, the eldest had tea for breakfast and orange wine and water to drink at night while the two other children had bread and milk for breakfast and cold milk at night. The two younger children contracted the disease and the eldest remained well. In this family the butler, who was given the usual beer money but virtuously saved it and drank milk instead, fell ill with enteric fever.

Inquiry at the farms which supplied milk to the dairy showed nothing out of the ordinary in connection with six of them but highly suspicious circumstances at the seventh. At this farm the occupier, who was an ambulatory case of enteric fever, died on June 8th and it became evident, as the inquiry proceeded, that he had infected a well from which water was taken to wash the milk utensils, although it had not been used for some time for drinking purposes as the supply from this source had become increasingly distasteful. This well was, in fact, heavily infected from a privy 56 feet away. It need hardly be said that the supply of milk from this farm was discontinued; but the epidemic had ceased on August 16th owing, no doubt, to the infection from the well having exhausted itself.

The writing of the report gave Dr. Radcliffe and Dr. Power the

¹ Dr. W. H. Power (later Sir William Power) became Medical Officer of the Local Government Board early in the year 1900, on the death of Sir Richard Thorne Thorne.

opportunity to emphasise the risks run by people in the towns owing to the faulty sanitary conditions of many of the farms from which their milk supplies were drawn. Each outbreak of enteric fever, whether conveyed to the patients by water or by milk, underlined the lesson of the importance of efficient sanitation. It is, indeed, not too much to say that at this time inefficient sanitary arrangements in any area would sooner or later be marked out by an epidemic of enteric fever. Just as litmus is an indicator in connection with certain chemical reactions, so outbreaks of enteric fever—and especially repeated outbreaks—were a sign which all who ran might read (if they had sufficient knowledge to do so !) that something was seriously wrong with the sanitary circumstances of any area.

The Hendon Epidemic of Milk-borne Scarlet Fever, 1885

During this period there were a number of epidemics of milk-borne scarlet fever and diphtheria in various parts of the country, notably at Halifax in 1880, St. Giles and St. Pancras in 1882 and Wimbledon and Merton in 1886-7. The 1885 epidemic at Hendon is chosen for description here because of the great epidemiological importance of Dr. Power's observations on the method of transfer of streptococci from lesions on the teats of cows to the milk by the hands of milkers.

The investigation of this outbreak by Dr. W. H. Power of the

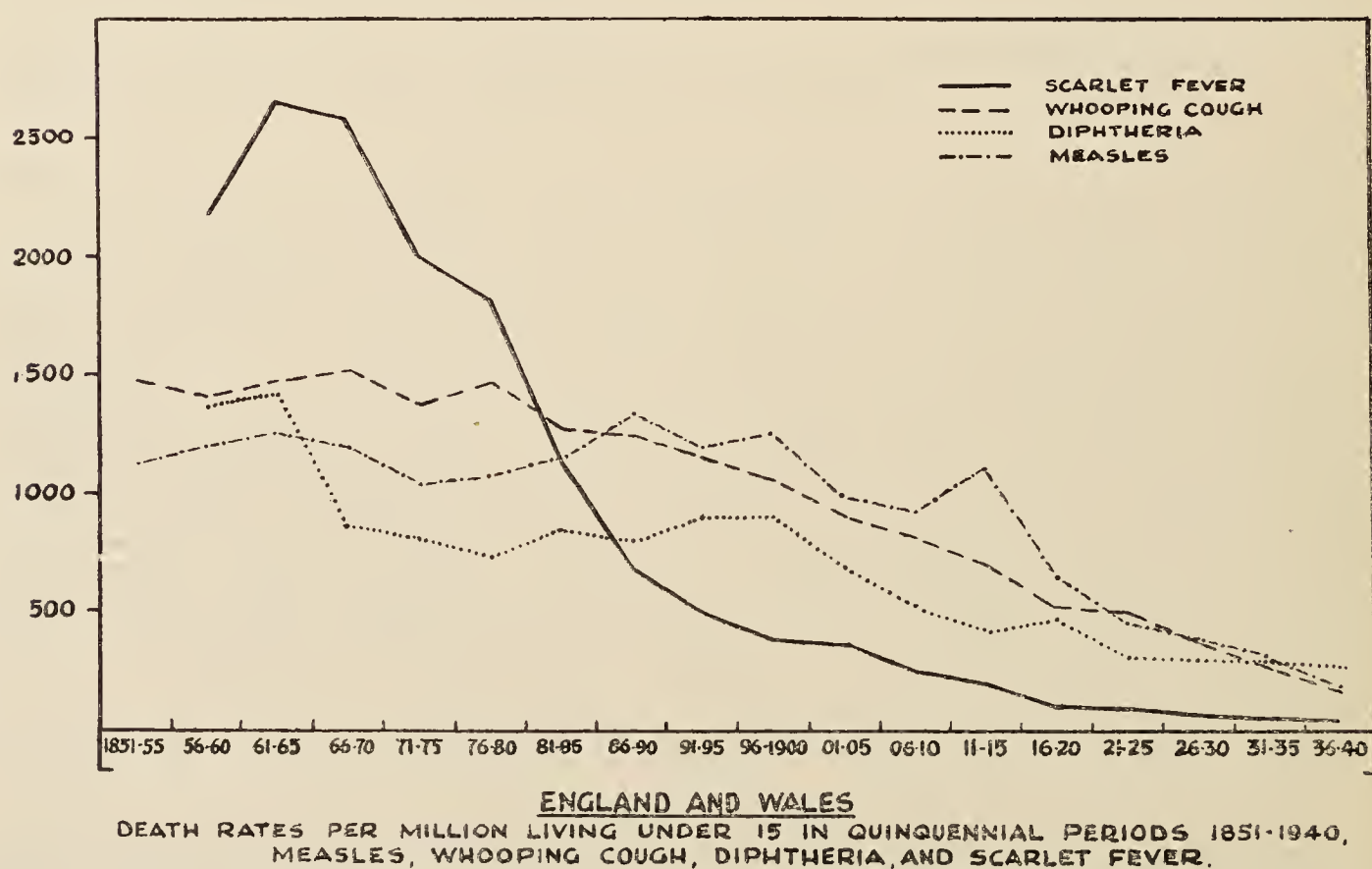


FIG. 2

Local Government Board was begun on information supplied by the Medical Officer of Health of Marylebone, Dr. Wynter Blyth, that cases of scarlet fever, apparently associated with a local dairy, were occurring in his district. It was soon ascertained that the dairy was supplied from a farm in Hendon which supplied milk to St. Pancras, St. John's Wood, Hampstead and Hendon; and cases of scarlet fever began to appear in all these areas. The farm, when inspected, was found to be well-conducted and it was not possible to criticise the sanitary arrangements or the water supply. Nor were there any outbreaks of disease among the farmer's family or his employees. It seemed therefore necessary to consider whether this outbreak could be derived from the cows themselves and Dr. Power, who was assisted by Dr. Klein, made detailed inspections and inquiries with a view to ascertaining whether infection could be produced in this way. As the outbreak in all the districts supplied from this farm occurred suddenly it was important to ascertain whether there had been any recent change in the circumstances of the herd of cows from which the milk had been obtained; and it was found that fresh importations had been received some little time before the outbreak, and that it was only in the districts to which the milk from these cows (some of which had ulcerated udders) had been sent that cases of scarlet fever were occurring in unusual numbers, and these only in families which received milk from dairies supplied from this source.

Klein, who carried out the bacteriological side of this investigation and whose findings are published in the Annual Report of the Medical Officer of the Local Government Board for 1885 (p. 90), found, by inoculation of material obtained from the udders and teats of diseased cows in the herd, that this condition could be transmitted from cow to cow. From the lesions he was able to grow a culture of streptococci which, when inoculated into healthy animals, produced a generalised disease which bore a close resemblance to human scarlatina. Klein also examined the milk from the suspected cows' udders and found it free from streptococci. It was apparent that the infection from the lesions had been transferred by the hands of the milkers to the milk and that the organism had multiplied in this medium.

There are no sanitary lessons to be derived from this epidemic, for the condition of the cowsheds from the sanitary point of view was unexceptional. But there is a lesson to be learnt nevertheless; and it is that epidemic disease continually occurs in unexpected places and shows itself in unexpected ways. The price of safety in Public Health is eternal vigilance.

The Hendon outbreak was of great epidemiological and bacteriological interest because it shed much light upon the ætiology of scarlet fever; and during the year 1886-7 Dr. Klein, F.R.S., on behalf of the Local Government Board, spent much time in an attempt to show whether or not the *micrococcus* isolated from the ulcers of the Hendon cows occurred in cases of human scarlatina. Klein¹ commenced his investigation by attempting to isolate the organism from the blood of persons suffering from scarlatina and he found that in a number of cases he was able to grow the organism on gelatine plates and other media, but the number of colonies was few. The organism thus obtained was, however, identical, as far as could be ascertained, with that isolated from the Hendon cows. Klein, in giving his views as to the close resemblance between the organisms obtained in the two ways, mentions that they were also similar to the *erysipelas micrococcus*, the *micrococcus pyogenes* of *Rosenbach*, and the *micrococcus* of puerperal fever; and he sums up the result of this part of his investigation by observing that "The total of the above-described characteristics of the *micrococcus* which is observed in cases of human scarlatina and in the Hendon cow-disease, suffice to justify the statement that it is morphologically distinguishable from any other known form of *micrococcus*; that it has a definite mode of existence of its own. We need not hesitate to name it the *micrococcus scarlatinae*."

Food Poisoning Outbreak at Welbeck, 1880

This outbreak, characterised by a peculiar epidemic of diarrhœa, occurred amongst persons who had partaken of refreshments provided at a sale of timber and machinery on the estate of the Duke of Portland at Welbeck, in Nottinghamshire, on June 15th, 1880, and succeeding days. Of those who partook of refreshments a large number became ill, some slightly and some severely, and two of those attacked died. Some of the food left over was given to poor families in the neighbourhood and members fell ill with the same sickness, two of them dying.

According to Dr. Ballard, who investigated this outbreak, the diarrhœa was the most prominent symptom and it was severe and intractable; but there was much abdominal pain, a high temperature and raised pulse-rate, headache and thirst, and excessive muscular

¹ Edward Emanuel Klein (1844-1925), justly referred to by MacNalty as "the father of bacteriology in this country," was in the service of the Medical Department of the Local Government Board for research purposes from 1871-1907, and he was for the long period of thirty years the most important exponent here of that science. His pupils included such famous people as Treves, Ross, Houston, Gordon and F. W. Andrewes.

weakness. As regards the cause of the illness inquiries narrowed it down to cooked ham which had been eaten by all the sufferers, including the poor families in Mansfield and Worksop; and the general opinion was that this meat was badly cooked and was tainted. Experiments were then undertaken with a part of the ham left over and this side of the investigation was conducted by Dr. Klein who found the presence of a sporing bacillus in the muscular fibre and intermuscular tissue. Animals fed with portions of the ham or inoculated from cultures became ill from pneumonia or pulmonary hyperæmia.¹

A similar series of cases, also investigated by Dr. Ballard, occurred in February, 1881, following the consumption of hot baked pork purchased from a shop in Nottingham. The organism found in connection with these cases was similar to that isolated in the Welbeck outbreak.²

Legislation in regard to Infectious Diseases

The Infectious Diseases Notification Acts, 1889 and 1899, which applied to the provinces but not to London, have already been referred to (p. 154). The system of notification thus initiated has proved of the greatest possible value to Medical Officers of Health in dealing with epidemics, because early information is vital in order that steps may be taken to prevent further cases arising. In London notification took place under sections 55–7 of the Public Health (London) Act, 1891.

Another weapon which Parliament placed in the hands of Medical Officers of Health at this period was the Infectious Diseases Prevention Act, 1890—a lineal descendant of the Diseases Prevention Acts earlier in the century—which contained provisions not found in sections 120–130 of the Public Health Act, 1875.³ The Infectious Diseases Prevention Act, 1890⁴ was adoptive. An important section is the one which empowers the local authority to prohibit the supply of milk from a dairy if there is adequate evidence that infectious disease is being caused, or likely to be caused, by it; and another section prohibits the retention, except with the written permission of the Medical Officer of Health or a qualified practitioner, of an infected corpse for longer than forty-eight hours elsewhere

¹ Report of the Medical Officer of the Local Government Board, 1880, pp. 36 *et seq.*

² *Ibid.*, p. 54.

³ These sections mainly deal with disinfection of houses and bedding, etc., after the occurrence of cases of infectious disease.

⁴ The whole of the Infectious Diseases Prevention Act, 1890, was repealed by—surprisingly enough—the Food and Drugs Act, 1938.

than in a public mortuary, or in a room not used as a dwelling or sleeping place or workroom.

Typhus and Enteric Fever

Until after the middle of the nineteenth century the medical profession had not succeeded, with the clinical methods at its disposal, in differentiating between enteric fever and typhus, with the natural result that they were generally regarded as the same disease. In the Registrar-General's returns they were both included, with other infectious diseases, under the heading "Fever" until the year 1869. After that time they were differentiated under the headings "Typhus" and "Enteric." Although it was difficult to distinguish these diseases on purely clinical grounds, members of the medical profession were aware that after death there was a characteristic ulceration of certain parts in the small intestine in the case of typhoid but not if the patient died of typhus. Brétonneau was of opinion that the diseases were identical, although he had observed the ulcers in the small intestine during post-mortem examinations which he had undertaken, but Gerhard and Pennock, after studying these diseases in Paris, believed that they were distinct; and Stewart of Edinburgh held the view that the mode of causation was different, enteric occurring under conditions of good ventilation, while typhus was noted as springing up when rooms were close and ill-ventilated.

The term "Fever" not only comprised enteric, including typhoid, but other infectious diseases came under this heading such as relapsing fever, cerebro-spinal fever and, sometimes, acute tuberculosis. Typhus, of the louse-borne type, was endemic in the poorer quarters of all the towns but it seldom became epidemic; whereas the epidemicity of enteric was its most pronounced characteristic. Farr observes that in 1829, English and American students, including himself, had the opportunity of studying typhoid fever (called by Brétonneau *dothinéenterie*) clinically under Louis¹ at La Pitié Hospital in Paris, and thus carried away clear ideas of a disease which could no longer be confounded with typhus.²

Diagnosis of enteric fever was greatly assisted by work which was done in the 'nineties by Pfeiffer, Bordet and Widal on the newly-discovered principle of agglutination of specific bacteria by the serum of patients who were suffering, or had suffered, from the corresponding infectious disease. Widal elaborated the diagnostic

¹ Pierre Charles Alexander Louis (1787-1872) was a distinguished clinician and teacher who studied typhoid and tuberculosis, and he had much influence on American medicine.

² Farr, William, *Vital Statistics*, p. 392 (published by the Sanitary Institute).



MEMORIAL TO MISS AGNES JONES (1832-1868)

test for typhoid fever which is known by his name, and Schottmuller, in 1900, applied the method of agglutination to separate the paratyphoid fevers from typhoid.¹ The serological test for typhus—the Weil-Felix reaction—was not discovered until well into the twentieth century.

Much interesting information about the incidence of typhus fever² in this country is given in the article by Dr. R. Bruce Low, appearing in the Annual Report of the Medical Officer of the Local Government Board for 1914–15. This disease began to disappear as sanitation improved and the need for personal cleanliness was brought home to the people by the spread of education. A progressive abatement of the incidence of typhus in London showed itself markedly in the last quarter of the nineteenth century. Dr. Charles Murchison in *The Continued Fevers of Great Britain* informs us that from 1848 to 1871 the London Fever Hospital treated an average of 834 cases annually. According to figures compiled by the Registrar-General there were 1,887 deaths from typhus in London in the period from 1871 to 1880, thus giving an annual death rate of 0.05 per 1,000 living; from 1881 to 1890 this figure fell to 0.01 per 1,000, and from 1891 to 1900 the number of typhus deaths was only 51. In the following ten years, from 1901 to 1910, the total number of deaths registered from typhus had declined to 9.

England and Wales as a whole had shared a similar experience in regard to this disease. During the period of fifteen years from 1869 to 1883 there was in this country a total of 23,702 deaths from typhus; in the similar period from 1884 to 1898, 2,249; and from 1899 to 1913, 390. The care of cases of typhus in hospital was, at such periods, an excessively dangerous occupation. Murchison mentions that at the London Fever Hospital, between 1848 and 1870, 288 cases of typhus fever originated in the hospital itself amongst the staff, and in the list were included 193 nurses and 14 medical officers. Miss Agnes Jones, the first trained nurse to be employed at a Poor Law Institution, died of this disease on February 19th, 1868 (p. 87).

In the North-West, Liverpool was for many years the chief centre of this disease, but all the cases were not of indigenous origin, many being infected by immigrants in course of transit to the United

¹ Bullock, W., *History of Bacteriology*, p. 281.

² The influence of typhus fever on the fate of nations is discussed in the fascinating pages of Hans Zinsser's *Rats, Lice and History*. One writer says of this disease:—"The history of typhus is written in those dark pages of the world's story which tell of the grievous visitations of mankind by war, famine, and misery of every kind."

States from such reservoirs of typhus as Poland, Galicia and Ireland. In the great epidemic of "fever" in Liverpool occurring in 1847, when many Irish immigrants fled from their country during the Potato Famine and landed in the port (p. 41), there were 5,847 deaths, some from relapsing and other fevers, but the vast majority from typhus. But even in the case of Liverpool there was a marked tendency for the number of deaths, registered as due to typhus, to decline. Thus, in the period 1856 to 1865, the average annual number of deaths from typhus was 748; from 1866 to 1875, 652; from 1876 to 1885, 238; from 1896 to 1905, 25; and from 1906 to 1913, 5.8.¹ By 1914, however, the ravages of this disease in Liverpool had practically ceased owing, largely, to the disappearance of the worst of the slums, and the rehousing of many thousands of those living in the most insanitary parts of the City in satisfactory accommodation.

Manchester never suffered from typhus to the same extent as Liverpool and, by the turn of the century, the disease had disappeared from the City, to appear again in a small epidemic of 20 cases in 1909. In this epidemic the assistant medical officer of health contracted the disease. During the great outbreak in Liverpool in 1847, ten medical practitioners and an equal number of Roman Catholic priests, died from infectious disease.²

Wigan also suffered from typhus from time to time. During the decennium 1871 to 1880 there were 112 deaths from this disease in the borough; from 1881 to 1890 16; and in the period 1891 to 1900, 41. Sunderland registered deaths from typhus fever for many years, the incidence of the disease in proportion to the population being there one of the highest in the country. In the period 1871 to 1880 the average annual number of deaths ascribed to this cause in that borough was 411, falling to 164 in the decennium 1881 to 1890, and to 48 between 1891 and 1900.³ After 1898 there was, however, a complete disappearance of the disease in Sunderland, with an unexplained reappearance in 1912 after the borough had been free for thirteen years. There is little doubt that this reappearance of an unwelcome visitor was due to infection from fomites brought in from outside.

Speaking generally, typhus fever in this country was a nineteenth century scourge arising out of insanitary and overcrowded housing

¹ Annual Report of the Medical Officer of Health of Liverpool, Dr. E. W. Hope, 1913.

² *Duncan of Liverpool*, p. 58.

³ Annual Report of the Medical Officer of the Local Government Board, 1914-15, p. 38.

and gross personal uncleanness, and it had ceased to be of any serious epidemiological importance by the year 1900.

Of the two main predisposing causes of typhus referred to in the last paragraph the first, namely insanitary and overcrowded housing, is fully discussed in other parts of this book. It may be convenient at this stage to make mention of the subject of personal cleanliness.

Personal Cleanliness.—It was, we are led to believe, one of the Victorians who coined the aphorism that cleanliness is next to godliness, and it is, perhaps, implicit in this saying that cleanliness was in that era one of the rarer virtues deserving, wherever it was discovered, a special measure of approbation. One of the features which distinguishes our twentieth century civilisation in England from any existing in the past has been the attainment of a high standard of personal cleanliness not only amongst the upper classes of society, but also throughout the more numerous ranks of the workers, whose opportunities for the exercise of such a virtue are much more limited. Until well into the nineteenth century the standard of personal cleanliness, even amongst the richer classes, was appallingly low. Many individuals, both of high and low estate, passed from infancy to old age without being cleansed all over at any one time.

Chadwick, who belonged to a family which believed in personal cleanliness, had this unusual virtue instilled into him at an early age, and this training may conceivably have had some influence on his future career.

Cleanliness amongst human beings does not appear to be an innate quality, as it is amongst most animals, and to secure it certain conditions are necessary. It is a product of training and education and it requires the provision of certain facilities which only the possession of a relatively high standard of living can supply. Our nineteenth century ancestors lacked baths and a plentiful water supply, and soap was excessively dear and of poor quality. To them, therefore, the standard of personal cleanliness which is regarded as normal amongst even the poorest classes in England to-day was an impossibility, even to those rare beings who might have had the desire to attain it.

We have seen in previous chapters of this book how progress in sanitation gradually brought to the towns of this country copious supplies of water which made a high standard of communal cleanliness possible. Personal cleanliness was a plant of much slower growth, depending, as it did, on the additional provision of baths in private houses and the availability of soap of good quality at low prices. Even to-day less than half the dwelling houses in this

country possess baths and the vast majority of these have been built during the present century. Indeed, until the gigantic building programme of the 'twenties and 'thirties of the present century—one of the greatest programmes of social amelioration this world has ever known—it was unusual for workers' houses to be provided with baths at all. To-day, so far have we advanced in such a short time, it would be unthinkable to build any house in an urban area without a bath and a supply of hot as well as cold water.

Soap—the product of the combination of a fatty acid with an alkali—was made in this country in the fourteenth century, but it was not manufactured in large amounts until towards the end of the nineteenth. With the advent of copious water supplies to towns and the increased possibility of personal cleanliness, the manufacture of soap began to constitute an important item in the industry of this country. The rise of the firm of Lever Brothers, Ltd., from small beginnings to its present position as the maker of most of the soap used in the United Kingdom is one of the great romances of English industrial history.

Personal cleanliness in a large part of the population is one of the latest attainments of an advancing civilisation. It is of some importance in the sphere of health. Septic conditions of the skin are much less common today than they were thirty or forty years ago ; typhus has disappeared in this country largely as a result of an increased standard of personal cleanliness which has practically extirpated body-lice from the community. But the greatest gain from an improved nicety in bodily habits has been an æsthetic one, especially valuable in a civilisation which depends so much on the aggregation of large numbers of people for the purposes of industry and amusement.

Influenza

That rather vague and mysterious clinical manifestation which had been given the name of influenza, came and went during the centuries as it listed without obeying any known laws. In the period of which we are now writing there were epidemics of influenza, sufficiently serious to merit inclusion in the official records and reports, in the winter of 1889–90, the spring of 1891, the winters of 1891–2 and 1893–4, and the spring of 1895. In the view of the Medical Department of the Local Government Board, influenza was a disease “against which it is most difficult to apply measures of prevention with any substantial prospect of success”¹;

¹ Annual Report of the Medical Officer of the Local Government Board 1894–5, p. 199.

and a by no means dissimilar opinion would be expressed today. The advice which the Board gave to the country during the 1895 influenza epidemic was as follows :—

- (i) The sick should be separated from the healthy. This is especially important in the case of first attacks in a locality or a household.
- (ii) The sputa of the sick should, especially in the acute stage of the disease, be received into vessels containing disinfectants. Infected articles and rooms should be cleansed and disinfected.
- (iii) When influenza threatens, unnecessary assemblages of persons should be avoided.
- (iv) Buildings and rooms in which many people necessarily congregate should be efficiently aerated and cleansed during the intervals of occupation.

CHAPTER 5

SOCIAL AND INDUSTRIAL CONDITIONS, 1875-1900

During the last twenty-five years of the nineteenth century progress towards the attainment of a higher standard of communal health had begun to accelerate. No longer was it necessary, as it had been thirty years previously, to fight every inch of the way when modest proposals for Public Health improvement were placed before Parliament. Public Health had become firmly established as one of the essential functions of government, accepted by all parties and by all sections of the community. If opposition to specific proposals for some detailed improvement to the administrative machine or for an extension of Public Health arrangements into wider fields ever developed, it was seldom to the principle of the new proposals, but almost always to methods and details. Public Health had been accepted, rather unwillingly, when the first Act with that title was passed in 1848; the Public Health Act, 1875, was welcomed on all sides as an enactment which consolidated all that time had shown to be valuable in the sanitary legislation of the past.

By the end of this century of work and effort, during which this nation had become wealthy and powerful, the population had increased from 8,892,000 in 1801 to 32,527,000 in 1901.¹ Emigration to the New World was much reduced during the 'nineties and, as the Census returns show, there was a pronounced tendency for many of those who had left the shores of this country to seek a new life abroad, to return. At the end of the last decade of the century the net loss by excess of emigration over immigration was only 68,000 for England and Wales and a few thousands for Scotland.² As far as statistics are a guide, there had been some definite improvement in the health of the people since 1875. The death rate, which for many years fluctuated a little above 22 per thousand of the population, began steadily, if rather slowly, to decline after 1875. During the quinquennium 1876-80 it was 20.8, between 1881-5, 19.4, and in the periods 1886-90, 1891-5 and 1896-1900 it was, respectively, 18.9, 18.7 and 17.7. The figures for all forms of tuberculosis exhibited a still more significant fall

¹ Census Returns—England and Wales.

² Clapham, J. H., *An Economic History of Modern Britain—Machines and National Rivalries*, p. 449. There was a revival of emigration early in the twentieth century.

during the period. As tuberculosis is a fairly sensitive index of the standards of living in a community, the figures which follow afford what is probably the most reliable criterion of the gradual improvement in the condition of the health of the people. Taking quinquennial periods for the sake of greater accuracy, we note that in 1851-5 the tuberculosis death rate was 3.6 per thousand of the population, that this figure fell to 3.3 in the period 1861-5, and to 2.9 in 1871-5. Continuing its fall, the tuberculosis death rate was 2.5 in 1881-5, 2.1 in 1891-5, and 1.9 in the quinquennium 1896-1900. The reduction in this death rate from 3.6 to 1.9 over a period of fifty years is the best statistical evidence at our disposal that life in England and Wales was improving from the social and industrial points of view. The unfavourable figure was that of the rate of infantile mortality which remained at round about 150 deaths in the first year of life per thousand births from the earlier years of the century up to its end, while the birth rate showed no signs of any spectacular change. In the quinquennium 1841-5 the birth rate was 32.3 per thousand of the population, in the period 1866-70 it was 35.3, in 1891-5, 30.5 and in 1896-1900, 29.3.

Lord Shaftesbury in 1885, just before he died, had spoken of the "enormous" improvement in sanitation and housing which he had seen since the 'forties,¹ and he gave evidence in this sense to the Royal Commission on the Housing of the Working Classes.² London's death rate fell below 20 in 1888 and after 1899 it never again reached this figure. But this was not exceptional; and the death rate for the country as a whole fell below 20 in the quinquennium 1881-5, and remained permanently in this state. Infantile mortality rates in London up to the end of the century tended to be above those of the rest of the country. Jephson³ thinks that in the later years of the century the London Vestries, which were responsible for sewage, scavenging and paving, had done their work reasonably well. The boroughs also appear, in many cases, to have put their house in order from the sanitary point of view. There are few serious complaints against the larger towns in the Local Government Board's reports of this period, although many against the smaller ones.

The social life of the country had undergone much transformation since the early years of the nineteenth century when England

¹ Clapham, J. H., *An Economic History of Modern Britain—Machines and National Rivalries*, p. 451.

² Report of the Royal Commission on the Housing of the Working Classes, 1885, p. 4.

³ Jephson, H., *The Sanitary Evolution of London*, p. 396.

was mainly governed by a land-owning aristocracy which dictated the standards of political thought and decided the conventions of polite society within its limited boundaries. Wealth, by the end of the century, had passed into the hands of manufacturers, industrialists and traders, who possessed few of the traditions of the old landed aristocracy but who, in their turn, became the recipients of honours and titles and created traditions of their own. Because of their numbers, joined to their intelligence, political power was beginning to pass into the hands of a middle class composed of professional men, financiers and technicians which, with its feet in both camps, conferred a strong element of stability on the social organism. Members of this class were not strong upholders of traditional ways but, instead, tended to support, as far as they understood them, the new methods of thought of which the exponents were John Stuart Mill, Darwin, Huxley and Tyndall.¹

Victorian England evolved a code of morals and manners all its own. In social relationships men and women were, outside the family circle, stiff, formal and polite especially in their contacts with the opposite sex.² Men wore top hats and frock coats not only on ceremonial occasions but also for business purposes. Women of any social position wore crinolines and long sweeping dresses until the late 'seventies or early 'eighties and their emancipation from this form of attire enabled them to lead more active lives which resulted in an improvement in health, retarded, however, by the retention of the tight corset. Discipline, self-help, the subordination of the woman to her husband and the child to his parent, were the fundamental social principles of Victorian England. Extensions of the franchise, especially that of 1867, the Education Act of 1870, the slow establishment of university colleges in provincial centres, based upon the external degrees of London University, and the beginnings of technical and evening education, were opening new worlds both of influence and knowledge to the downtrodden masses. While the higher education of women was furthered by the founding of women's colleges at Oxford and Cambridge, their economic emancipation was advanced a stage by the passing of the Married Women's Property Act, 1870.

¹ Some of the books which influenced thought during the second half of the century were as follows :—Smiles' *Self Help*, Buckle's *History of Civilization*, Drummond's *Natural Law in the Spiritual World*, Newman's *Apologia*, Lecky's *Rise and Influence of Rationalism in Europe*, Darwin's *Origin of Species* and Spencer's *Principles of Ethics*.

² Many writers have waxed satirical about the Victorian pre-occupation with that part of the moral code which deals with the relationship between the sexes. Thus Macaulay's remark "We know no spectacle so ridiculous as the British public in one of its periodical fits of morality."

The building societies, some of which dated from the preceding century, continued to enlarge the scope of their activities amongst the lower middle classes. Largely through their agency the foundations were being laid of what was to be referred to many years later as "a property-owning democracy."

The great amount of legislation passing through Parliament at this period entailed consideration of the means by which it was to be administered. The administrative machinery of government, faced with many new tasks, was placed on a more efficient footing by the institution in 1870 of a system of competitive examinations for entrance to the Civil Service.

Human progress was marching forward on all fronts, and in the van of this procession was the movement for the improvement of the health of the people, without which all the other advances in industry, education and social organisation would have been valueless. There were, however, unfortunate gaps in the line of progress and one of these—the gross inequality in the distribution of wealth—had serious repercussions upon the health of the people. It is generally agreed by economic historians that England became a wealthy country in the nineteenth century; but that this accumulation of wealth was accompanied by two unfortunate consequences—the decay of agriculture and the sacrifice of several generations of workers to the claims of the industrial machine. When the free importation of grain was permitted by the repeal of the Corn Laws in 1846 the statesmen of the day, wittingly or not, made a decision that was fraught with enormous consequences for this country and, indeed, for the world. The consequences for the world at large were the influences which the United Kingdom, as an industrial power of the first magnitude, has been able to exert upon the course of history during the nineteenth and twentieth centuries. For this country itself, these consequences have been momentous because the repeal of the Corn Laws exposed agriculture to the competition of the rich corn lands in the United States and thus led to the permanent depression of that part of the farming industry which depended mainly upon the growing of cereals. Trevelyan gives the date of the "collapse" of English agriculture as commencing in 1875 and the cause as the development of the American prairies as grain lands within reach of the markets of this country.¹ The depression in agriculture continued as the pressure of competition increased, and all the time the number of field workers on the land was decreasing while the urban populations expanded.

The sacrifice of workers to the demands of industry, which took

¹ Trevelyan, G. M., *English Social History*, p. 552.

place during the whole of the nineteenth century, has been referred to in previous chapters, and especially in those sections dealing with the Factory Acts. Apart, however, from the physical harm done to the workers by insanitary conditions in factories, by dangerous processes and by long hours of labour, there was one outstanding evil which took precedence of all others, and that was the low standard of wages which led to hopeless and soul-destroying poverty for the vast majority of those who worked with their hands.

England during the third quarter of last century presented a picture of vivid contrasts—at the one end of the scale there was wealth and luxury greater than that of any other country in the world, and at the other, unbelievable poverty, almost ceaseless toil and, often-times, despair. At this distance of time, and in the light of wider knowledge and experience, it is possible to realise what was happening in the economic field during the greater part of the nineteenth century. So long as England remained an agricultural community with a comparatively stable population and a very slowly increasing national income, no strains of any magnitude would be experienced in at least the non-political part of the organism. The rapid emergence of the United Kingdom as an industrial community made it essential that a large proportion of the national income should be devoted to capital equipment—roads, bridges, railways, houses and factories—rather than to the production of consumer goods; and, in consequence, the standard of living remained low, as far as the vast majority of the population was concerned. Under different political and economic conditions it might have been possible to have slowed down the programme of capital equipment and, in particular, to have reduced the amount of foreign investments. Such a course of action, if it had been politically possible, would have meant more consumable goods and, because the standard of living of the population would have been improved, a decrease in the death rate. A stationary birth rate and a reduced death rate would have caused a more rapid rise in the population than actually occurred and, sooner or later, as the competition of the United States and Germany in the markets of the world increased, difficulties in paying for the increased food imports necessary to maintain the standard of living would have been experienced.

The pessimistic picture painted by Sir John Simon in his reports must be contrasted with the modified optimism of Charles Booth who, with his collaborators, surveyed the social and industrial scene in the working class quarters in London during the period from 1889–1902. He was confident, as was Shaftesbury in regard to housing at an earlier

period, that the sum total of life in London in the later years of the nineteenth century was showing progress in every respect as compared with the earlier years. "We see life cursed by drink, brutality and vice," he says in his final volume, "and loaded down with ignorance and poverty, while industry is choked by its own blind struggles, and education is still painfully mounting, and too often slipping back from the first rungs of the ladder. . . ." "Improvement there certainly has been at every point." . . . "Closely connected with the vitality and expansion of industry, we trace the advancement of the individual which in the aggregate is represented by the vitality and expansion of London. This it is that draws from the provinces their best blood, and amongst Londoners selects the most fit."¹

Those economists who have tried to obtain precise figures of the fluctuations in earning power in various trades and occupations in this country during the nineteenth century, in an attempt to ascertain how far the increased wealth of the community as a whole had benefited the working classes, are faced with serious difficulties because of the scarcity of data at some periods and of uncertainty about price-levels. Professor Bowley expresses a provisional opinion in regard to money wages by taking an index figure of 100 for the period 1890-9 and estimating wage-levels in terms of this figure for a number of ten year periods during the century. Thus, for 1840-50 the index figure is 60 ; from 1850-60, 65 ; from 1860-70, 75 ; from 1870-80, 95 ; and from 1880-90 it is 90 ; and this is summarised in the brief statement that "money wages in the 'nineties were 10 per cent. above those of the 'eighties, and 30 per cent. above those of the 'sixties."² There were, therefore, material gains to the worker in the later years of the nineteenth century, especially as the purchasing power of money had, in Bowley's opinion, tended to increase ; but these gains were only in comparison with the extremely low wage levels in the 'forties and 'fifties, and much improvement was necessary before it could be said that a substantial proportion of the labouring classes received earnings which lifted them well above the poverty line.

Social surveys in the twentieth century have become a commonplace, and there are few of the larger towns of this country where careful investigations relating to the manners and customs of different income-groups in the community have not been undertaken during the last thirty years. These surveys were of great

¹ Booth, Charles, *Life and Labour in London*, Final Volume, 1902, p. 204. But note the remark of Junius "The noble spirit of the metropolis is the life-blood of the state, collected at the heart." *Letters*, 1769-72, No. 37.

² Bowley, A. L., *Wages in the United Kingdom in the Nineteenth Century*, 1900, p. 126.

sociological and Public Health value to the generations in which they took place and, in the course of time, they will provide material of historical importance for the benefit of posterity. It is a matter for regret that such an abundant source of information about the lives of the poorer classes in England is not available in respect of the eighteenth and the greater part of the nineteenth century, when social changes of considerable magnitude were taking place, about which, in their impact upon the working man and his family, we are imperfectly informed. The two social surveys which we are fortunate enough to have are those of Charles Booth, in London, and Seebohm Rowntree, in York. That of Booth took place over a period of about thirteen years commencing in 1889, and the results appear in a series of 17 volumes, of which the last was published in 1902. Rowntree's social survey of his native city of York took place during the last few months of the century and constitutes a not unfitting termination to a hundred years of effort, by many reformers, both of great and lowly estate, in the cause of the oppressed. We have already referred to the reports of Booth and his co-workers in London and it will be necessary to mention them again; but it may be expedient to describe here the general results of the classic survey planned and undertaken by Rowntree in 1899.¹ Standards of living were divided into four classes. Class A comprised the poorest people in the city, *i.e.*, those in which the income was under 18s. per week for a moderate-sized family. Out of 656 families, comprising 1,957 persons, the average wages, including the earnings of children, were 11s. 7d. per week. Rowntree says of this class, "Few people spend all their days in Class A. It is nevertheless a class into which the poor are at any time liable to sink should misfortune overtake them, such as continued lack of work, or the death or illness of the chief wage-earner." "Many families too will rise above it when the children begin to earn money. But the old people, who have no children growing up, must remain in the class until they die, or enter the workhouse."²

Rowntree places the "poverty line" at the minimum necessary expenditure for the maintenance of merely physical health, and he calculates this amount on the basis of outgoings in respect of food, house rent (including rates), and household sundries (such as clothing, light, fuel, etc.).

On the costs then (1899) ruling in York, the minimum necessary

¹ The main title given by Rowntree to his report on this survey is simply *Poverty*. In 1935 he instituted a second social survey in York, and his book on this is given the optimistic title *Poverty and Progress*.

² Rowntree, B. Seebohm, *Poverty*, p. 47.

expenditure for a man, wife and two children, for example, was 18s. 10d. per week. On this basis no less than 1,465 families, comprising 7,230 persons, were living in "primary" poverty, and this was equal to 15.46 per cent. of the wage-earning classes in York, and to 9.91 per cent. of the whole population of the city.

Class B consists of persons with an income of between 18s. and 21s. for a moderate-sized family. Rowntree's comment is that this class consists chiefly of unskilled labourers and their families, and although their standard of living is a degree better than that of Class A, there is, nevertheless, a large amount of poverty among them. The bulk of the children in this class are not working, and practically all of the families in it live from hand to mouth. Any extraordinary expenditure, such as a piece of furniture or clothes, has to be met by a reduction in the amount spent on food; but this does not apply to the wage earner, who still obtains his ordinary share. The pawnshop temporarily solves many of these people's difficulties, and some families pawn their Sunday clothes every Monday and redeem them on Saturday night after receiving their wages.

Class C consists of families with incomes between 21s. and 30s. per week and the margin in this case is a fairly wide one. Some of these families, where the husband is a steady worker, have comfortable homes. Class D is composed of all families with incomes of over 30s., who do not keep domestic servants. These are skilled workers, such as foremen, and men in positions of some responsibility. There is no poverty in this class except that caused by drink or gambling. Education, even in this class, has grave limitations because until 1888 "the compulsory education clauses were imperfectly enforced in the city." "It is from among the thoughtful men in Class D that the Trade Unions, the Co-operative Movement, and Friendly Societies find many of their leaders. The Temperance Cause, and other efforts for social advancement, gather not a few helpers from this class."¹

Intemperance

No account of the social circumstances of the English working classes during the nineteenth century would be complete which did not consider the question of the consumption of alcohol and the effects of the prevailing intemperance upon the health of the people. It seems certain that the excessive consumption of alcoholic beverages by the poorer classes in England during the period from about 1830 to 1900 was the cause of a large, but unascertainable, amount of

¹ Rowntree, B. Seebohm, *Poverty*, p. 76.

ill-health and many deaths each year. Gin-drinking before the middle of the eighteenth century had led to the appalling social consequences amongst the poor portrayed by Hogarth in "Gin Lane," and, at that period, its adverse effects upon the health of the people were so great that in some years the burials in London were greater in number than the baptisms. The taxation of spirits from 1851 onwards led to a definite improvement in the spirit-drinking habits of the people throughout the country; but in spite of the increased cost of gin it was consumed to excess in the poorer quarters of all the larger towns during the whole of the nineteenth century, and in the literature of the time there are many references to the serious harm which this practice caused. Newsholme refers to the consumption of alcoholic drinks as "one of the chief enemies of preventive medicine,"¹ and the reports of the Medical Officers of Health during the second half of the nineteenth century confirm the fact that intemperance was a fertile source of ill-health and of other social evils. The local histories of many of the towns record the vast amount of drunkenness, the many brawls, the frequent cases of cruelty to children, and the increase of poverty due to the excessive use of spirits and beer. Professor Burdon-Sanderson² and Dr. Parkes, in a report published in 1871, observe that "drunkenness and the consequent poverty, degradation and squalor, lead to starvation and beggary." Sidney and Beatrice Webb, referring to the destitution brought about by drink, express the opinion that "it seems apparent that, once the Public Health Authority was responsible for searching out diseases, one of the first diseases which would call for systematic prevention and cure would be chronic alcoholism."³

The Royal Commission on the Housing of the Working Classes, which reported in 1885, had some interesting observations to make about dirt as well as intemperance to which they preface the question "Is it the pig that makes the sty or the sty the pig?" Lord Shaftesbury thought that the miserable abodes of the very poor conduced to dirt, intemperance and immorality; while another witness, the Rev. J. W. Horsley, considered that intemperance was both the cause and consequence of overcrowding, but chiefly the cause, and he points out the rarity of a teetotaler living in a slum with his family in one room.⁴ There appeared, however, to be a large consensus of evidence that continual drinking, not necessarily

¹ Newsholme, Sir Arthur, *The Evolution of Preventive Medicine*, p. 200.

² Later Sir John Burdon-Sanderson.

³ Sidney and Beatrice Webb, *English Poor Law Policy*, 1910, p. 306.

⁴ Report of the Royal Commission on the Housing of the Working Classes, 1885, p. 15.

drunkenness, caused too large a proportion of the slender wages of the worker to be spent harmfully instead of upon better food and shelter.¹

Apart from the causes of intemperance it is certain that the *opportunities* for intemperance were present at nearly every street corner and throughout the whole day. In Liverpool, where the evils of intemperance were found to an exceptional degree, the number of on-licences in 1871 was 2,317, and this was gradually reduced, under legislation, to 1,356 in 1929, the latter number, excessive as it was, serving a population nearly twice that of 1871.² Ordinary drunkenness was, indeed, regarded by many as nothing more than an amiable weakness, meriting sympathy rather than blame, and little notice was normally taken of it. In Birmingham at the end of the 'seventies and during the earlier years of the 'eighties there was an understanding, known locally as the "quiet drunkard's Order," under which the police did not interfere with persons under the influence of drink who were capable of making their way home and who did not behave in a disorderly manner.³

The manifold causes contributing to intemperance were largely removed during the first quarter of the twentieth century by licensing legislation, which gradually reduced the number of public houses and curtailed the hours during which they were open, and by the provision of better housing and more wholesome amusements.

Those of us who live in the age of wireless and the cinema and are able to attend football and cricket matches, or even to play these games, if we happen to wish to do so, and have open to us the perennial happiness which the ability to read affords, can hardly imagine the boredom of the lives of the illiterate working class men and women living in the slums of the great cities in England during the nineteenth century, surrounded by every circumstance of discomfort and misery. Sir John Simon has depicted in graphic language not only the poverty of the working classes but also the irremediable hopelessness of their situation, a fact of which many of them were aware after the first careless rapture of youth was over.

¹ " Yet in this metropolis, it is the general custom for tradesmen, journeymen, and even labourers, to have regularly on their tables the big brewers' poison twice in every day, and at the rate of not less than a pot to a person, women as well as men, as the allowance for the day. A pot of poison a day, at fivepence the pot, amounts to seven pounds and two shillings in the year! Man and wife suck down, in this way, fourteen pounds four shillings a year! Is it any wonder that they are clad in rags, that they are skin and bone, and that their children are covered with filth?" William Cobbett, *Advice to Young Men*.

² Hope, E. W., *Health at the Gateway*, p. 42.

³ Bunce, J. T., *History of the Corporation of Birmingham*, Vol. II, p. 284.

There was, for the vast majority of the industrial population, no permanent escape from the circumstances in which, through no fault of their own, they found themselves. One means of escape was temporary oblivion and this they found through alcohol.

It was only natural that the prevailing intemperance of the times should provoke strong reactions not only from the Churches but also from the strong Liberal element in politics which forced through Parliament a Bill for licensing reform early in the twentieth century, and was strongly identified with the temperance movement in the nineteenth. Much of the power behind this movement came from the Nonconformist Churches, but the Church of England Temperance Society had a very large membership and there were other organisations such as the Blue Ribbon Army, the Rechabites and Bands of Hope, which preached total abstinence from alcohol and made an important feature of the signing of a pledge, especially in the case of children. There was, perhaps, an element of exaggeration in these movements, provoked by the immensity of the evils which they were fighting; but a great part of the impetus for licensing reform came, directly or indirectly, from their efforts, and the improvement in social conditions, which took place towards the end of the nineteenth and during the earlier years of the twentieth century, tended strongly towards a reduction in the consumption of alcohol.

Figures which are given in the annual reports of Medical Officers of Health of deaths from alcoholism greatly under-estimate the actual numbers, as medical practitioners were reluctant to give certificates in this form, preferring instead to certify a terminal condition. In many of these reports emphasis was placed on the danger to infants of being overlaid by intoxicated mothers, and great numbers of such tragedies occurred.

There is no doubt that it was the relative improvement in social conditions towards the end of the nineteenth century which exercised a favourable influence in the direction of a reduction in drunkenness. Charles Booth, reporting towards the close of the century on the subject of social conditions in London, was satisfied that actual drunkenness in the streets had decreased.

B. Seebohm Rowntree thought that there was no reason to suppose that the working class people of York spent less on drink than the amount of 6s. per family which careful inquiries had found to be the average for this country as a whole at that time, and this would absorb more than one-sixth of the average family income.¹ He felt, however, both as regards gambling and intemperance, that

¹ Rowntree, B. Seebohm, *Poverty*, Second Edition, 1902, p. 143.

these evils were the outcome of the sordid conditions under which too many of the working classes lived.

Prostitution

No account of the social circumstances of any country during any given period would be complete without some mention of prostitution—one of the age-long iniquities of mankind; and this subject is of particular interest in the history of England during the second half of last century because of the passing of the Contagious Diseases Acts and the agitation for their repeal. Prostitution has existed since the earliest times, being at some periods concealed, at others openly regarded as necessary, but always resulting in the degradation of those unfortunate beings who, from choice or necessity, have sold themselves into this form of slavery. In Victorian England the fact of the existence of prostitution was hidden from the gaze of polite society and, like the diseases which come from it, could never be mentioned in mixed company. The moral code was harsh and the girl who “fell” was often forced by economic circumstances to earn her living in the only way then open to her. Poverty and unemployment amongst women were often the recruiting agents for the streets. “The decay of cottage manufacture starved orphan girls until they bowed the head for bread.”¹ By many people the prostitute was regarded as a safety-valve, protecting from danger the virtue of her chaster sisters. Lecky expresses this point of view in vivid phrases: “Herself the supreme type of vice, she is ultimately the most efficient guardian of virtue. . . .” “On that one degraded and ignoble form are concentrated the passions that might have filled the world with shame. . . . She remains, while creeds and civilisations rise and fall, the eternal priestess of humanity, blasted for the sins of the people.”²

It is, however, necessary to guard ourselves against the temptation to exaggerate the magnitude of the evil of prostitution in England during that period. There was probably relatively little of it in the smaller towns and this evil only attained serious dimensions in London, naval and military stations, and some of the larger ports like Liverpool. While many of the consequences of venereal diseases, spread by prostitution, were hidden from the knowledge of the medical profession of those days, it was fully realised that these diseases were responsible for much ill-health which afflicted the innocent as well as the guilty. Charles Booth gives a long

¹ Trevelyan, G. M. *English Social History*, p. 491.

² Lecky, W. E. H., *History of European Morals*, Vol. II, p. 299.

account of prostitution in London and makes a number of proposals for regulating it. "The proposals I have made," he says, "do not touch the connection of prostitution with disease, nor do I think that this can be dealt with by Contagious Diseases Regulations, except as regards a body of men under discipline, confined within moderate bounds, as in a garrison town; but, in these cases, the special licensing of houses of accommodation open only to certificated women and those accompanying them may be desirable."¹

It was the diseases caused by prostitution rather than the moral and social evils flowing from it which influenced the passing of certain Acts of Parliament which have been criticised more strongly than any other legislation in English history. The first of the three Contagious Diseases Acts was passed in 1864, an amending Act, incorporating the provisions of the first with some additions, came into force in 1866, and a third, for the amendment of the Act of 1866, was passed in 1869. Of these, the most important was the Contagious Diseases Act, 1866, which is described in its long title as "An Act for the better Prevention of Contagious Diseases at certain Naval and Military Stations." The stations included in this Act were Portsmouth, Plymouth, Devonport, Woolwich, Chatham, Sheerness, Aldershot, Windsor, Colchester, Shorncliffe, the Curragh, Cork and Queenstown. Liverpool, which was referred to in one of the reports as a "hot-bed of Syphilis," was not included as it was not a naval or military station. The principal object of the Contagious Diseases Acts was to secure the compulsory periodical medical examination of prostitutes following their occupation in the naval and military stations scheduled, and this was enforced by the order of a Justice of the Peace made upon a sworn information by a Superintendent of Police.² The period of the order was not to exceed one year. If, upon medical examination, it was found that the woman was suffering from a contagious disease³ she was liable to be detained in a Certified Hospital, in the first place for a period of three months, but this could be extended, on a certificate of the Chief Medical Officer of the Hospital, by a further three months. Refusal to be medically examined, absence without leave from a Certified Hospital, or neglect to conform to its Regulations, entailed a penalty of one month's imprisonment for the first offence and three months for each succeeding offence. The Contagious Diseases Act, 1869, strengthened the provisions of the Act of 1866 and the maximum period of detention in hospital was extended to nine months.

¹ Booth, Charles, *Life and Labour in London*, Final Volume, 1902, p. 131.

² Section 16, Contagious Diseases Act, 1866.

³ This included syphilis and gonorrhoea.

The Contagious Diseases Act, 1866, appears to have been passed by Parliament without much discussion, and a considerable period of time elapsed before the country as a whole realised that a system of compulsory medical inspection of prostitutes, similar to that in force in France and Belgium, had been established in various parts of England and Ireland. This system evoked approval in some quarters and indignation in others, and the controversy upon the administration, operation and effect of these Acts lasted for many years. One interesting feature of the controversy was the appearance of a quarterly journal called "The Medical Enquirer," which was the organ of the National Medical Association, a voluntary society having as its object the abolition of the State regulation of prostitution. The President of the Association was Dr. J. Birkbeck Nevins, of Liverpool, and he was supported by a large number of prominent medical men. On the other hand, many members of the medical profession expressed themselves in favour of the Acts.

In the earlier stages of the controversy, indeed, a powerful association, which included many doctors, was founded for the purpose of extending the so-called advantages of the Contagious Diseases Acts to the remainder of the population. The programme of the "Association for Promoting the Extension of the Contagious Diseases Act, 1866, to the Civil Population of the United Kingdom" was regarded as of sufficient importance to merit serious discussion by Simon in his eleventh Report (1868) to the Privy Council. The final conclusion of the Medical Officer of the Privy Council was that he could not recommend the proposed extension of compulsory legislation, such as had been adopted at the military and naval stations, to the remainder of the country.

Simon thought that any schemes for the compulsory treatment of such of the population as were suffering from any of the venereal diseases would be expensive, and might prove ineffective owing to indifferent administration on the part of the many local authorities which had failed to deal properly with the sanitary problems of their areas. In this report he expressed no opinions about the desirability or otherwise of the compulsory powers operating at the various military and naval stations, as this question was not within the scope of his duties; but he was quite clear that the extension of the Contagious Diseases Acts to the civil population would present difficulties that might well prove to be insurmountable.

This controversy led to the appointment of a Royal Commission, whose report in 1871 recommended the continuance of the system contained in the Contagious Diseases Acts, except for the periodical examination of women, but with certain modifications, including the

partial extension of the Acts to the Metropolis. No legislative action was taken as a result of the recommendations of the Royal Commission and, the controversy continuing, a Select Committee of the House of Commons was appointed in 1882 to inquire into the administration, operation and effect of these Acts. It reported to the effect that the Acts should not be repealed, as they were a valuable safeguard to the health of soldiers and sailors stationed at naval and military establishments; and it recommended that female Lock Hospitals (the Certified Hospitals of the Act) should be organised in districts not covered by the Acts.

Of all the individuals who in that period fought against the Contagious Diseases Acts the greatest was Josephine Butler (1828–1906), whose lifetime work in the interests of women and children has earned her a place amongst the heroines of the nineteenth century. Born at Milfield Hill in the county of Northumberland, Josephine Elizabeth Grey married in 1852 George Butler, an Oxford scholar who became a schoolmaster. His brother was the famous Dr. Montague Butler, Headmaster of Harrow. Mr. Butler was Principal of the Liverpool College from 1866 to 1882, when he was appointed by Mr. Gladstone to a Canonry at Winchester. It was while living in Liverpool that Mrs. Butler began to realise fully the evils of prostitution and the degradation of womanhood which that system entailed.

Josephine Butler had heard of the system of the so-called regulation of prostitution while in Paris, but it was not until 1866, after the second of the Contagious Diseases Acts had been passed, that she became aware that similar measures were in operation in this country. In one of her speeches she describes her feelings when the full realisation that this infamous system had received legal sanction in the British Isles dawned upon her. "It seemed to me as if a dark cloud were hanging on the horizon threatening our land."

From that time up to the end of her life, helped by the sympathy of her husband, Josephine Butler devoted her time and her very great talents to the repeal of the Contagious Diseases Acts and to the cause of women in all countries who were downtrodden and oppressed. She and other women founded in 1869 the Ladies National Association for the repeal of the Contagious Diseases Acts and, with Harriet Martineau, Florence Nightingale, Mary Carpenter and many more, she signed the solemn protest against the continuance of this system. This movement received a great accession of strength in 1874 when Mr. Stansfeld, a prominent member of the Government, joined it.

In March, 1871, Mrs. Butler gave evidence before the Royal Commission (p. 201) in a somewhat unsympathetic atmosphere, and later in the same year she published in *The Constitution Violated* a full and weighty argument against the policy embodied in the Contagious Diseases Acts. Her argument was based upon the famous 39th clause of Magna Carta:—"No freeman shall be taken, or imprisoned, or disseised, or outlawed, or banished, or anyways destroyed . . . unless by the lawful judgment of his peers, or by the law of the land," and she quoted the high legal authority of De Lolme, Guizot, De Toqueville and Blackstone in support of her contention that the Contagious Diseases Acts violated both the principles and the letter of the Constitution.

In spite of the failure to induce either the Royal Commission or the Select Committee to recommend the repeal of the Acts, the National Medical Association and the Ladies' National Association continued their campaign, and early in the 'eighties it was becoming evident that many people were beginning to realise that the Acts were unfair and one-sided, subjecting one sex to a compulsory medical examination while leaving the other, equally to blame for the spread of venereal diseases, entirely free from any kind of supervision or control. Medical opinion was being converted to the view, supported by statistical evidence from all over the world, that the Acts were failing in their primary purpose—the reduction of the incidence of venereal disease. During one period of the campaign there were 673 petitions from various towns against the Acts and only 65 in favour. Petitions from the churches and chapels in the subjected towns numbered 209 against the Acts and none in favour. Opinion amongst women ran strongly against the continuance of the system. The result of this opposition to the Acts, and especially to the compulsory examination of women which was the essence of the system, was that Mr. Stansfeld carried a resolution in the House of Commons, in April, 1883, which had the effect of inducing the Government to suspend these examinations. The Contagious Diseases Acts were repealed in 1886 by the Contagious Diseases Acts Repeal Act of that year.

Mr. Stansfeld's adherence to the cause of the abolition of the Contagious Diseases Acts was an example of political high-mindedness seldom seen in this or any other country. In 1874 Stansfeld¹, who was then a Cabinet Minister, abandoned this

¹ James Stansfeld (1820–98). Entered Parliament in 1859. President of Poor Law Board, 1871. Resigned ministerial office in 1874 to become a leader in the agitation for the repeal of the Contagious Diseases Acts. Moved repeal in House of Commons in 1886. Became President of the Local Government Board in the same year.

office to devote himself to the cause which Josephine Butler had so much at heart. "Its heroine was Josephine Butler; its hero James Stansfeld."¹

From the time when Mr. Stansfeld in the House of Commons moved the suspension of the compulsory periodical examination in 1883 up to the war of 1914–18, the country seemed to have despaired of being able to cure or prevent venereal diseases, and little or no action was taken by successive Governments in regard to them. The Lock Hospitals, used so much during the period of the Contagious Diseases Acts but dating back, in one form or another, to the Middle Ages, continued in some cases to exist under voluntary auspices. Apart from these hospitals, the ravages of syphilis continued unchecked and no method of treatment of any value, except the prolonged use of the dangerous and health-destroying mercury preparations, was discovered until the early part of the twentieth century² (p. 335).

The Care of the Poor during the later part of the Nineteenth Century

In Part I, Chapter 3, we brought the account of the Poor Law down to the passing of the Metropolitan Poor Act, 1867, which effected long needed improvements in the efficiency of the treatment of the sick poor in London, and we traced the influence of this Act upon the organisation of the medical care of the poor in the provinces. The history of the Poor Law during the later part of the century was little affected by legislation, but developments in administration occurred, influenced by the growing humanitarianism of the times, which made the lot of the pauper somewhat less hard and less uncomfortable than it had ever been before. Poor Law administration had since 1834 varied according to the spirit and enlightenment of the Boards of Guardians. "In the last quarter of the century Poor Law requirements in regard to the old had been much relaxed, although the kind of relief which was given depended almost entirely on the policy which individual Poor Law Unions thought fit to adopt."³

Analysing the official figures for the year 1892, Booth found that nearly one-third of old people in England and Wales received parish

¹ Ensor, R. C. K., *England 1870–1914*, p. 171.

² Syphilis is said to have been introduced into Europe by the Spanish sailors of Columbus on March 4th, 1493 (*dies Europæ fatalis*), when they landed in Lisbon. The London Lock Hospital was opened in 1747, Mr. William Blomfield, a surgeon, being one of its founders. The disease derives its name from that of the hero of a poem by Fracastorius, in which the symptoms of syphilis are described.

³ Booth, Charles, *The Aged Poor in England and Wales*, 1894, p. 54.

relief; that this proportion fell to one-fourth or rose to one-half according to the degree of prosperity; and he sums up by saying that "on the whole people are poor because they are old, and poorer in some places than in others because the whole community there is less prosperous."

Although the Poor Law Board was merged into the Local Government Board in 1871 this alteration did not mean any significant change either in policy or in administration. As has been seen above, the treatment of the aged poor tended to become more generous, but the degree of generosity varied in different areas and the attitude of the unions to the able-bodied adult was still rigid, being influenced by the prevalent suspicion that a large proportion of the workers were incorrigibly idle, preferring to be kept by the Guardians rather than to toil long hours each day. Improvements in the treatment of the beneficiaries of the Poor Law were, at this period, restricted to the aged poor and to the sick. There were, however, periods of tightened administration due largely to the increased strictness of the Local Government Board's inspectorate. Thus from 1871 onwards the policy was to reduce the amount of out-relief and insist upon the workhouse for the aged and infirm and for the sick as well as for the able-bodied.¹ There was, indeed, a strong tendency during the first ten years after the establishment of the Local Government Board to go back to the principles of 1834 in the treatment of the indigent poor. The Manchester Board of Guardians in 1875 adopted a set of rules which were designed to place additional restrictions upon the grant of outdoor relief, and this was the signal for a general tightening-up of the administration of the Poor Law all over the country which lasted until 1885.

Children under the Poor Law.—Some account was given in a previous Chapter (p. 105) of the policy adopted by the Poor Law Board prior to 1871 in regard to children. At that time children were being treated in a more humane way than before, and a beginning had been made in transferring them away from the workhouses to foster-parents, scattered homes and cottage homes and in making arrangements for their education. The period from 1871 to the end of the century is a period during which those methods passed from the stage of experiment to that of development. One feature of the new outlook on education, for example, was the willingness of the Central Authority to sanction arrangements made by the Boards of Guardians for the attendance of the children for whom they were responsible at public elementary schools, instead of segregating

¹ Webb, Sidney and Beatrice, *English Poor Law Policy*, p. 150.

them for purposes of education in classes at the institutions, and this gave them opportunities for mixing with other children.

Boarding-out of pauper children was a system which was still on trial when the Local Government Board took over responsibility for the Poor Law in 1871. This method never applied to more than a small proportion of Poor Law children because of the difficulty in securing suitable homes, but it was a system which was developed to the greatest practicable extent during the last quarter of the century. Apprenticeship continued, but under conditions which ensured that the evils associated with this system earlier in the century were not repeated. Outfits were provided by the Guardians for children going into employment and care was taken that the occupation was suitable and not likely to be harmful. Normally objection was taken to a child going to service without money wages, or to an inn or public house.¹ In time the practice of some Boards of Guardians of providing a communal home for working boys was accepted by the Central Authority and this became customary before the end of the century.

A series of Acts was passed giving Poor Law Unions more and more power in respect of the guardianship of children whose parents were unfit, for any reason, to have charge of them. Thus, by an Act of 1889, the responsibilities of guardianship could be assumed if the child was deserted by its parent and maintained by the union, or if the parent was imprisoned under a sentence of penal servitude or imprisonment in respect of an offence committed against a child. Derelictions of the duty to the child on the part of the parent, imprisonment, vicious habits, drunkenness leading to detention under the Inebriates Act, 1898, all became valid reasons for a Court to transfer the guardianship of children to the Poor Law Unions.

Poor Law Hospitals.—During the period from 1865 onwards, as has been seen, an attempt was made by Boards of Guardians, with the active encouragement of the Central Authority, to improve the staffing and equipment of sick wards in workhouses and to erect separate infirmaries. During the period from 1871–85 the admission of patients from outside to this improved hospital accommodation continued, but the Poor Law Branch of the Local Government Board, in pursuance of its policy of discouraging out-relief, severely restricted the domiciliary services rendered by the district medical officers. The preference, at that time, was to require admission to the workhouse hospital. This policy was not, however, entirely unjustified in view of the poor housing conditions

¹ Webb, Sidney and Beatrice, *English Poor Law Policy*, pp. 200–1.

and the considerable improvement in the standards of the Poor Law hospitals. It was some years before the legality of the admission of non-paupers into Poor Law hospitals was regularised by Act of Parliament even in the case of persons suffering from infectious diseases. By the Poor Law Act, 1879, the Metropolitan Asylums Board was expressly empowered to receive non-pauper patients, under contracts with the local Public Health authorities; and the Diseases Prevention Act, 1883, a temporary measure, laid it down that the admission of a person for treatment to a Poor Law Hospital (in London) should not be deemed parochial relief or carry any disqualification.¹ This provision was made permanent by the Public Health (London) Act, 1891; and the Poor Law Act, 1889, applying to the provinces, authorised the admission to Poor Law hospitals of non-paupers, payment being recoverable by the Guardians, if they thought fit.

The extension of the principle of the admission of non-paupers into Poor Law hospitals for the treatment of infectious diseases to their admission for other types of diseases gradually came about, before the end of the century, by the administrative action of the Central Authority and not by specific legislation.

The Trade Union Movement

During the first half of the nineteenth century when the State, in the interests of Public Health, was beginning to exercise some supervision, through the Factory Acts, over the conditions under which a large part of the industrial community was forced to work, a complementary movement was taking place within the ranks of the work-people themselves. The Trade Union movement, slow and halting in its beginnings and exposed at the outset to the full force of the hostility of both the Government and the employers, finally became, by the early part of the twentieth century, a recognised part of the machinery of industry. The movement arose late in the eighteenth century at a time when a ferment of new ideas was beginning to act in men's minds and to induce a discontent with things as they were which, at some stages, threatened, or appeared to threaten, the settled order. The writings of Rousseau, Voltaire and Tom Paine, with their insistence on freedom and the rights of man, the French Revolution, the Chartist Movement, the lessened influence of the churches upon urban populations—these, and other influences acting at that time, supplied the stimulus to demands by the working classes for a share in the power hitherto wielded by

¹ Webb, Sidney and Beatrice, *English Poor Law Policy*, p. 213. These Acts only applied to the admission of infectious cases to Poor Law Hospitals.

the select few. Although the intellectual background of chartism was socialistic, the reformers who supported this movement at its inception were not disposed to use force or, like the Jacobins in France, threaten revolution; but the early attitude of moderation suffered a change before the passing of the Reform Act, 1832, and this piece of legislation was not placed on the Statute Book without serious trouble in some of the larger towns. The Chartists, indeed, desired drastic changes in the constitutional, social and industrial structure of the country, but in the early years of the movement they avowedly sought to procure their aim of placing all classes of society in possession of equal political and social rights "by every legal means." In the late 'thirties, however, their peaceful mood changed and some of their leaders such as Lovett were imprisoned for sedition in 1839.

Although the immature beginnings of the Trade Union movement were crushed by Pitt's Combination Acts of 1799 and 1800, which rendered trade unionism illegal and punished all associations of wage-earners, there were no corresponding steps to enforce a fair wage and the effect of this legislation was simply to place employees completely under the power of the masters. "The policy represented not true *Laissez faire*, but State interference on the side of Capital against Labour."¹ Largely as a result of the efforts of Francis Place and Joseph Hume the formation of trade unions became legal in 1824-5 by the repeal of the Combination Acts. Although it was no longer forbidden to associations of workers to form trade unions, there was little leadership shown in the earlier days of the legalised movement and, as a consequence, no kind of long-term programme was formulated. The early history of trade unionism showed how difficult it was, in the absence of clear-cut principles, to organise workers in all the various industries in such a manner that they could face employers on such matters as hours of labour, minimum wages, overtime and conditions of employment, and be enabled to negotiate, in combination, on more equal terms. In the early days, the trade unions were not intended to embrace only one trade or craft or to include only one grade of employee, but were designed to become, in different areas, organisations having as members all the working class. The Grand National Consolidated Trades Union included agricultural labourers and women.² The movement, however, got caught up in 1830-5 in one of the many phases of Owenism,³ and it was Robert Owen who was the

¹ Trevelyan, G. M., *History of England*, p. 567.

² Usher, A. P., *Industrial History of England*, p. 519.

³ Webb, Sidney, *Cambridge Modern History*, Vol. XII, p. 748.

moving spirit behind the Grand National Consolidated Trades Union which was formed in London in January and February, 1834. Almost at the very commencement of its career the Grand National was involved in the case of the "Tolpuddle Martyrs," Dorsetshire labourers who, at a time of appallingly low agricultural wages, were sentenced to transportation for seven years, not for striking against the miserable conditions of their employment, but on the charge of administering unlawful oaths. In spite of petitions organised by the Grand National Consolidated Trades Union the Home Secretary refused to commute the sentences and the men were duly transported to Botany Bay. This seems to have been a grave miscarriage of justice on the part of a temporarily panic-stricken Government, but it led to some changes in the organisation of the Grand National, including the omission of oaths and other ritualistic forms which had led to misunderstanding of the motives and purposes of the union.¹ When this trade union encouraged the operatives in the London tailoring trade to strike for shorter hours the attempt failed, and it became evident that Owen's grandiose scheme for including all workers in one great association was too ambitious and had no chance of success. In 1845 one more attempt was made to organise the trade union movement on the basis of a national scheme and this, too, failed, and from that time progress was in the direction of the strengthening of the powers of the craft unions. These unions devoted themselves to the simple purposes of increasing wages and reducing hours. It must be emphasised, however, that most of the unions, except, perhaps, the Amalgamated Society of Engineers, possessed at that time a small membership and were financially weak. None was powerful enough to challenge the employers on any substantial issue and hope to succeed. The weakness of the unions until the end of the century supplied the reason for the interest which was taken by Parliament in hours and conditions of work in factories. Some of the matters dealt with in factory legislation during this period, especially in regard to hours of labour, were subjects which could safely be left to negotiations between strong unions and the employers. The Trade Union Act of 1871 provided for the registration of trade unions and thus gave them what seemed at the time to be an assured status, allowing them to hold limited amounts of property.

Amongst those who were instrumental in strengthening the trade

¹ Sidney and Beatrice Webb in their *History of Trade Unionism* describe the trial by Baron Williams of George and James Loveless and their fellow labourers as a "scandalous perversion of the law." It is at least to the credit of English justice that in 1836 the remainder of the sentences of the six labourers was remitted. The charge against them was under the Unlawful Oaths Act, 1796.

union movement during the second half of the century were William Allan and Robert Applegarth, the general secretaries respectively of the Amalgamated Society of Engineers and the Amalgamated Society of Carpenters, and George Odger, a member of a small union of makers of ladies' shoes. Allan was a skilled organiser and something of a bureaucrat and it was largely owing to his leadership that the Amalgamated Society of Engineers became so powerful. Applegarth was concerned with the elevation of the status of trade unions, so that they should become trusted by the country at large and be allowed to share in the movements for political and social reform. These men and others who followed them became recognised, not merely as trade union officials, but as working-class leaders who ought to be consulted about any affairs of State which affected the masses of the people. "For the first time in the century the working class movement came under the direction, not of middle and upper class sympathisers like Place,¹ Owen, Roberts, O'Connor or Duncombe, but of genuine workmen specially trained for the position."²

The great trade depression during 1878-9 was used by the employers to reduce wages and increase hours, and generally to withdraw from their employees many of the advantages gained by the trade unions during the previous twenty years. Some of the smaller unions collapsed under the strain, especially those of the agricultural labourers who have always been difficult to organise, and even the National Union of Miners, established in 1862-3, only survived in a small number of districts. But trade unionism continued, in spite of the set-backs of these two years of depression, and during them the annual Trade Union Congress met as usual.³ At this time Socialism was arising in the trade union movement owing to the propaganda of Hyndman and William Morris who were preaching the doctrines of Karl Marx. Information about the conditions under which the working classes were living became widespread as various Royal Commissions and Select Committees reported on this subject and, towards the end of the century, the results of Charles Booth's survey in London created an enormous

¹ Francis Place (1771-1854). In early life a leather breeches maker. In 1796 assisted in the publication of Paine's *Age of Reason*. Was in close touch with Bentham, James Mill, Godwin and Robert Owen. Was instrumental, in 1814, in securing the repeal of the Statute of Apprentices. Wrote *History of Reform Agitation* and, in 1838, drafted the People's Charter. Place helped the Chartist leaders during their imprisonment in 1839-40. See *The Life of Francis Place* by Graham Wallas, 1898.

² Webb, Sidney and Beatrice, *History of Trade Unionism*, Revised edition, 1920, pp. 238-9.

³ The first Trade Union Congress met at Manchester in 1868.

impression on all classes of society. One solution of these problems, especially the problem of poverty, was claimed to be Socialism.

Even by the end of the century, the position of the trade unions was seen to be not unassailable. The intention of legislation passed between 1871 and 1875 was to render a strike lawful and the funds of the trade union not liable to be wasted in damages for breach of contract or for tort during the strike. The effect of the decision of the House of Lords in the Taff Vale Case (1901) was, *inter alia*, that damages and costs could be recovered against the property of a trade union just as against a private person. Accordingly, the right to strike, which the trade unions thought had been conceded to them by the Trade Union Acts, 1871-5, appeared to have become invalid through the Taff Vale Judgment, and the position of the unions had become untenable if, after any stoppage of work, they were to be subject to repeated actions for damages at the instance of employers. A Royal Commission on Trade Disputes and Trade Combinations, appointed by the Conservative Government in 1903, reported three years later in favour of the principle that a trade union should accept full responsibility for its actions, subject to certain amendments in the law relating to this subject. One of the early acts of the Liberal Government, after the General Election of 1906 had brought the party into power, was to pass a Trade Disputes Act, which declared that no civil action should be entertained in any Court against a Trade Union in respect of any wrongful act committed by or on behalf of the union during the course of an industrial dispute. This Act for some years fulfilled its purpose, and gave to the trade unions sufficient immunity from legal proceedings to enable them to undertake their primary functions of exerting pressure on employers, if necessary by strikes, for the purpose of increasing wages or improving conditions of employment.¹

Trade unions are of some interest to students of Public Health, first, because they nearly all administered schemes of sickness benefit, secondly, because as they became stronger they exercised a gradually increasing influence on wages, and therefore, on the standard of living, and thirdly, because their officials were of assistance to the inspectors in administering the Factory Acts.

¹ The Osborne judgment will be referred to in a later chapter.

CHAPTER 6.

THE STATE OF THE PUBLIC HEALTH BETWEEN 1875 AND 1900

Local Authorities for Public Health Purposes

Up to the year 1872 England was divided into a maze of local authorities, and the overlapping and division of function which this occasioned made sanitary administration not only difficult but inefficient. The principle of the Public Health Act, 1872, was to map out the whole country into districts of various kinds each under one defined authority, charged with the duty of exercising all sanitary functions in its area. This principle was followed in the consolidating Public Health Act, 1875. As regards sanitation it was evidently necessary to have regard to the differing requirements as between town and country areas ; and the 1875 Act (sec. 6) laid down two types of authority for this purpose—the urban sanitary district and the rural sanitary district. The urban sanitary district was either a borough, an Improvement Act district or a Local Government district. In the case of a borough the authority consisted of the Mayor, Aldermen and Burgesses acting by the Council, in the case of an Improvement Act district the Improvement Commissioners, and in the case of a Local Government district the Local Board. Each of these authorities exercised all the sanitary duties required by the Act, in its area. In rural areas, however, sanitary duties were discharged by the Guardians, who constituted the Rural Sanitary Authority, and the Select Vestry, who were the Sewer Authority.

This organisation of local authorities continued until the reforms in Local Government administration which took place in 1882, 1888 and 1894. The Municipal Corporations Act, 1882, created, in its modern statutory form, the Borough Council ; the Local Government Act, 1888, the County Council¹ and the County Borough Council ; and the Local Government Act, 1894, in county areas, the Urban District Council and the Rural District Council.

The position of port authorities was, in the nature of things, different from that of the ordinary Local Government authorities. Before the end of the third quarter of last century the quarantine system, which was based upon a number of Acts of Parliament passed between 1710 and 1825, was beginning to die out. Sir John Simon had severely criticised it (p. 96) and it was recognised that practices which greatly interfered with foreign trade but which, at the same time, were unable to prevent the importation of dangerous

¹ Including the London County Council.

infectious diseases, ought to be abandoned. The creation of Port Sanitary Authorities had as its object the abolition of quarantine and the substitution for it of a system of medical inspection of crew and passengers, the ship being detained only long enough to do this, to deal with the sick, and to carry out any measures of disinfection thought necessary. The various quarantine enactments were finally abolished by the Public Health Act, 1896, but long before that time the system had fallen into disuse except, to a limited extent, in the case of yellow fever¹. Even in the case of yellow fever, quarantine had signally failed to prevent the importation of this disease into Swansea, in 1865, through the sailing barque "Hecla" (p. 96).

After 1872, and more particularly after 1875, the creation of Port Sanitary Authorities continued apace, and the Local Government Board, under these Acts, assigned to the new authorities duties and powers necessary for the effective carrying out of the sanitary requirements in connection with shipping, including precautions against the admission of the major infectious diseases. The Public Health (Ports) Act, 1896, enabled the Board to assign to Port Sanitary Authorities powers under the Infectious Diseases Prevention Act, and a series of General Regulations dealing with Cholera, Yellow Fever and Plague was issued. The system of medical inspection thus adopted and continued, with such amendments as have been thought necessary, up to the present day, differs from quarantine in the following respects:—

- "(a) It affects only such ships as have been ascertained to be, or as there is reasonable ground to suspect of being *infected* with cholera or choleraic diarrhoea (no vessel, according to the Order, being deemed infected unless there has been actual occurrence of cholera or of choleraic diarrhoea on board in the course of the voyage) ;
- (b) It provides for the detention of the vessel only so long as is necessary for the requirements of a medical inspection, for dealing with the sick (if any) in the manner it prescribes, and for carrying out the processes of disinfection ;
- (c) It subjects the healthy on board to detention only for such length of time as admits of their state of health being determined by medical examination².

This is an exact expression of the principles which governed the

¹ Stock, P. G., "Progress and Problems in Port Health Administration," *Proceedings of the Royal Society of Medicine*, August, 1946. Dr. Stock has been the principal medical adviser to the Ministry of Health on the Port Medical Service for many years.

² From a Memorandum of the Medical Officer of the Local Government Board, published in the Annual Report for 1877, p. 159.

administration of the various port sanitary authorities during the latter part of the nineteenth century and, with some amendments of a not very important character, the statement would hold good to-day. Customs officers had dealt with quarantine, and under the changed system it became their duty to report the arrival of vessels in which any disease whatever was extensively prevalent, to the port sanitary authority for the necessary action to be taken. The relative advantages of the system of medical inspection as against quarantine in dealing with cholera were discussed at the International Sanitary Conference held at Vienna in 1874 ; and a large majority of the delegates declared in favour of the former system¹.

One of the landmarks in the history of this subject was the formation of the Association of Port Sanitary Authorities in 1898.

Housing during the later part of the Nineteenth Century

Mention has already been made of Torrens's Act, 1868 and with the amending Acts of 1879 and 1882 this statute provided for the gradual improvement of dwellings inhabited by the working classes, and for the building and maintenance of the improved dwellings. Although Torrens's Acts were of some value they were obviously designed to operate on a small scale. On the other hand, the Artizans and Labourers Dwellings Improvement Acts, commonly known as Sir Richard Cross's Acts, which were passed in 1875 and 1879, and amended in 1882, were designed to do on a large scale what Torrens's Acts were intended to do in connection with smaller areas². Select Committees of the House of Commons enquired into the operations of the first two of Sir Richard Cross's Acts in 1881 and 1882 and the scope of the two series of Housing Acts is compared in the Draft Report of the Chairman of the Committee of 1882 in the following terms :—

“ Mr. Torrens's Acts proceed upon the principle that the responsibility of maintaining his houses in proper condition falls upon the owner, and that if he fails in his duty the law is justified in stepping in and compelling him to perform it. They further assume that houses unfit for human habitation ought not to be used as dwellings, but ought, in

¹ From a Memorandum of the Medical Officer of the Local Government Board, published in the Annual Report for 1877, p. 162.

² The Artizans Dwellings Act, 1882, amended in part I the Artizans and Labourers Dwellings Improvement Acts of 1875 and 1879 ; and in part II the Artizans and Labourers Dwellings Act of 1868 and the Artizans and Labourers Dwellings Act (1868) Amendment Act, 1879. The former series of Acts (Sir Richard Cross's Acts) are to be cited together as the Artizans and Labourers Dwellings Improvement Acts, 1875–1882, and the latter series (Torrens's Acts), the Artizans Dwellings Acts, 1868–1882.

the interests of the public, to be closed and demolished, and subsequently rebuilt. The expropriation of the owner is thus a secondary step in the transaction, and only takes place after the failure of other means of rendering the houses habitable."

"The Acts of 1875-79 (Sir Richard Cross's Acts) proceed upon a different principle. They contemplate dealing with whole areas, where the houses are so structurally defective as to be incapable of repair, and so ill-placed with reference to each other as to require to bring them up to a proper sanitary standard, nothing short of demolition and reconstruction. Accordingly, in this case, the local authority, armed with compulsory powers, at once enters as a purchaser, and on completion of the purchase proceeds forthwith to a scheme of reconstruction."

Such was the legislation available at the time for the improvement of housing conditions. Operations under Torrens's Acts, and especially those on a larger scale under Sir Richard Cross's Acts, were evidently an expensive procedure, and local authorities showed little desire to take energetic steps to remedy housing conditions in their areas. The gross evils of overcrowding, and of insanitary and dilapidated housing, therefore continued, and efforts were made by Parliament to inquire whether any further steps could be taken to remedy conditions which were recognised as having a highly adverse effect upon the Public Health. The first result of Parliamentary concern about housing was the appointment of two Select Committees of the House of Commons in 1881 and 1882 and, as a result of their reports, a Bill was introduced by Mr. Shaw-Lefevre for the amendment of Torrens's and Cross's Acts, which was passed into law as the Artizans Dwellings Act, 1882. Pressure was put upon local authorities by the Local Government Board to administer the Acts relating to housing as energetically as possible ; but public opinion was still gravely concerned about the lack of progress, and early in the session of 1884 the Marquess of Salisbury moved in the House of Lords for the appointment of a Royal Commission to inquire into the Housing of the Working Classes. An interesting feature of this debate in the House of Lords is that the Prince of Wales,¹ who had himself visited some of the poorest parts of London, spoke in favour of the motion, and His Royal Highness agreed to serve on the Royal Commission which was later appointed. Other members of the Royal Commission were Sir Charles Dilke, the President of the Local Government Board, Cardinal Manning, the

¹ Later King Edward VII.

Marquess of Salisbury, Sir Richard Cross and Mr. W. T. M. Torrens.¹ Sir Charles Dilke was the Chairman.

An interesting witness before the Commission was the veteran Lord Shaftesbury, who expressed the opinion, as a result of more than 60 years' experience, that however great the improvement of the condition of the poor in London had been in other respects, the overcrowding had become more serious than it ever was. Lord Shaftesbury also said that the Labouring Classes Lodging Houses Act, 1851, for which he had been responsible, had been an absolute dead letter as far as the local authorities were concerned. A vast amount of evidence was taken from numerous witnesses as to the housing conditions in most of the large towns and it became clear that, both in London and in the provinces, the local authorities were not putting into force the legislation available, although some criticised the Housing Acts on the grounds that they were cumbrous and difficult to work. Some of the recommendations of the Commissioners were as follows:—

That in all urban sanitary districts the local authorities should be empowered to make byelaws under Section 90 of the Public Health Act, 1875, without any previous action on the part of the Local Government Board ;

That the sanitary laws as regards the metropolis should be consolidated ;

That facilities for travelling at reduced fares before certain times in the morning should be extended ;

That, when workmen's houses are demolished to make way for industrial enterprises, it should be first necessary to provide equivalent accommodation elsewhere ;

That the provision in the Public Health Act, 1875, for the infliction of a penalty in connection with a nuisance should also apply to the metropolis ;

That water supplies should be, as a rule, in the hands of the local authority ;

That Section 134 of the Public Health Act, 1875 (which gives power to any local authority, if it thought fit, to make byelaws for securing the decent lodging and accommodation of persons engaged in hop-picking in their area), should be amended so that it would become compulsory for such byelaws to be made ;

That vacant land in towns or in the neighbourhood of towns should be rated on its capital instead of its income value.

¹ Report of the Royal Commission on the Housing of the Working Classes, 1885.

There were also a number of recommendations in regard to land tenure, leases and the provision of loans for housing purposes ; and the bugbear of all schemes of housing the working classes near the centres of large towns, namely, the high cost of land, cropped up. Lord Salisbury thought that the price of land (within ordinary limits) and the cost of building had been defrayed elsewhere and could be defrayed here (in London) by rent which the labourer was in a condition to pay ;¹ but he admitted that the "extraordinary" price of land constituted the most formidable difficulty. This problem has been solved in modern times by the provision of subsidies, but there is no suggestion of this form of State aid in the Royal Commission's recommendations. One of the most interesting of the witnesses before the Commission was Mr. Edwin Chadwick, C.B., at that time 84 years of age, who appeared as President of the Association of Sanitary Inspectors. Chadwick criticised housing conditions in various parts of the country, especially in Lancashire, emphasised the need for the better qualification of sanitary inspectors and extolled the virtues of concrete houses as against those built of common brick. He gave it as the opinion of the sanitary inspectors that they ought to be well examined ; and, on the subject of the tenure of appointment of both medical officers of health and sanitary inspectors, he thought that they should be protected from being discharged by local authorities. On the subject of the price of land for public purposes he said that the price charged was sometimes as much as 150 times the rent and this greatly retarded sanitary work throughout the country. He recommended that the price should be twice the rent.²

The immediate result of the report of the Royal Commission was the passing into law of the Housing of the Working Classes Act, 1885, which laid it down that every local authority entrusted with the execution of laws relating to Public Health must put into force the powers given them so as to secure the proper sanitary condition of all premises within their districts ; empowered local authorities to make bylaws in respect to houses let in lodgings ; and made provision for the sanitary supervision of tents and vans, etc. The Act of 1885 was relatively unimportant but the great consolidating Act of 1890³ compared, in the sphere of housing, to the Public Health Act, 1875. This Act was divided into three main parts, dealing with unhealthy areas and improvement schemes, unhealthy

¹ Report of the Royal Commission on the Housing of the Working Classes, 1885, p. 60.

² *Ibid.* pp. 520-1.

³ Housing of the Working Classes Act, 1890.

dwelling-houses, and the provision of lodging houses by local authorities ; and there were four subsidiary parts concerned with administration. Unhealthy areas were to be represented to the local authority by the Medical Officer of Health on the following grounds :—(a) that any houses, courts or alleys were unfit for human habitation, and (b) that the narrowness, closeness, bad arrangement, or the bad condition of streets and houses or groups of houses within such area, or the want of light, ventilation or proper conveniences, or any other sanitary defects, or one or more of such causes, were dangerous or injurious to the health of the inhabitants either of the buildings in the said area or of the neighbouring buildings, and that the most satisfactory method of dealing with the evils connected with such houses, courts or alleys, and the sanitary defects in such an area, was an improvement scheme. Improvement schemes were subject to the confirmation of the Local Government Board after a local inquiry had been held. Confirmation was by way of a Provisional Order. In boroughs and districts outside London the requirement to provide houses for those dispossessed by the operation of an improvement scheme was not obligatory.

Part II of the Act, dealing with unhealthy dwelling-houses, made it the duty of the Medical Officer of Health to report to his local authority any dwelling-house that appeared to be in a state so dangerous or injurious to health as to be unfit for human habitation ; and the local authority, if satisfied, might make a demolition order against which, however, the owner had a right of appeal to a court of quarter sessions.

Part III was concerned with the powers of local authorities to erect or purchase lodging-houses for the working classes ; and in view of the doubts expressed by witnesses before the Royal Commission of 1884 as to the meaning of the term “ lodging-houses ” as used in Lord Shaftesbury’s Act of 1851, this was explicitly defined as including separate houses or cottages for the working classes, whether containing one or several tenements (sec. 53.)

The Housing of the Working Classes Act, 1890, is the first of the modern Housing Acts and much of the language used in it is still contained in housing legislation. Procedure by way of a “ local inquiry ” was found so successful that it is still used.

Action Taken by Local Authorities, 1870-1900

It has been seen that the failure of Torrens’s and Sir Richard Cross’s Acts was due not so much to inherent faults in this legislation as to the supineness of local authorities, which were reluctant to face the high costs of the demolition and rebuilding of unhealthy dwellings.

The Housing of the Working Classes Act, 1890, possessed the similar defect that it rendered schemes of improvement expensive, as compensation for demolished houses had to be paid by local authorities.

Some of the larger towns, especially those in Lancashire where conditions were very bad, had made some attempts to remedy the worst of their housing evils, but these never continued for long and the slums built in the first half of the century continued to be a festering sore in the body politic. We have already seen that Liverpool had elaborated a procedure under the Sanitary Amendment Act, 1864, which resulted in some of the worst of the courts in the working class areas being demolished. This procedure, which was used from 1864 to 1904, resulted in the demolition of 6,344 of the worst houses in Liverpool.¹ The Artizans and Labourers Dwellings Improvement Act, 1875, enabled a notoriously insanitary area known as the Nash Grove area to be dealt with. The tenements built upon the cleared area—renamed Victoria Square—were opened in 1885 by Mr. (later Sir Richard) Cross, who was then Home Secretary and sponsor of the Act. As was stated in evidence before the Royal Commission in 1884, Liverpool had a decided preference for dealing with these problems by means of local legislation, and most of the numerous houses demolished up to 1904 came under the Sanitary Amendment Act procedure. Only in a small proportion of cases were families dispossessed in this way given accommodation by the Corporation. Building of working-class houses was very active at that time and the “jerry-builder” was a power in the land.² Some made large fortunes but, on the whole, by providing houses of a reasonable standard at rents which the working-classes could afford to pay, they performed a useful service to the community.

In Manchester, where housing conditions were as unsatisfactory as anywhere in Lancashire, the first Medical Officer of Health was not appointed until 1868, and his activities under the Act of that year were for some time severely curtailed by the Council. Instead of utilising Sir Richard Cross's Act for the purpose of demolishing insanitary property and re-building on the site, the Health Committee continued their policy of gradual re-conditioning instead of attempting more drastic action.³ Many of the most unwholesome of Manchester's insanitary areas were, however, swept away as a result of the requirements of industry and commerce. The Medical

¹ Hope, E. W., *Health at the Gateway*, p. 172.

² For an interesting account of the lives of some of the Welsh builders who erected many of the smaller houses in Liverpool at this period, see J. R. Jones, *The Welsh Builder on Merseyside*.

³ Simon, Shena D. (Lady Simon), *A Century of City Government*, p. 292.

Officer of Health emphasised the need for the Corporation to build houses or tenements to provide for people displaced, but this was not done, the compensation required by the Acts being here, as elsewhere, an obstacle to progress in regard to housing. "This was certainly the hey-day of *laissez-faire* as applied to housing, but Manchester does not deserve more blame than other cities."¹ On the outskirts of Manchester private builders, operating under new bye-laws passed in 1890, erected houses which were more satisfactory. They were in rows, built forty to the acre, but the sanitary arrangements were good and they possessed water-closets and water laid on to each house.

Newsholme, who was at one time Medical Officer of Health of Brighton, gives an interesting account of the housing efforts in that borough which had been described by a former vicar as a ragged garment with a golden fringe—its magnificent esplanade!² In 1879 the then Medical Officer of Health represented two insanitary areas for the purposes of improvement schemes under the Artizans and Labourers Dwellings Improvement Act, 1875, but, although estimates of costs had been prepared, no further action was taken. Dr. Newsholme, in 1888, officially represented a small area of 91 houses and, in 1890, a larger scheme, and a third area was condemned at a later date. The total population of these three areas was 2,158 persons and, in view of the high compensation to owners, these schemes, necessary as they were, were carried out at great cost. Concurrently with these operations much work was also done in dealing with individual houses, either by way of repair or demolition.

The first serious attempt to deal with housing in Birmingham was made under the Artizans and Labourers Dwellings Improvement Act, 1875. Owing to the efforts of Mr. Joseph Chamberlain, then Mayor of Birmingham, an Improvement Committee was constituted in 1875 and later in the same year an "official representation" under the terms of the Act was presented by Dr. Hill, the Medical Officer of Health, which included portions of St. Mary's and Market Hall Wards. This area was described in the Medical Officer of Health's report as follows:—"Narrow streets ; houses without back doors or windows ; situated both in and out of courts ; confined yards ; courts open at one end only, and this one opening small and narrow ; the impossibility, in many instances, of providing sufficient privy accommodation ; houses and shopping so dilapidated as to be in

¹ Simon, Shena D. (Lady Simon), *A Century of City Government*, p. 293.

² Newsholme, Sir Arthur, K.C.B., *Fifty Years in Public Health*, pp. 160-8. Sir Arthur Newsholme was Medical Officer of the Local Government Board from 1908 to 1919.

imminent danger of falling, and incapable of proper repair.”¹ The scheme adopted by the Improvement Committee included the construction of a new street, of maximum width 22 yards, and the widening of the approaches to it, and the repair or demolition of many of the houses in the area. In his speech to the Council on this scheme the Chairman of the Improvement Committee gave examples of the grossly insanitary condition of this area and its consequent effect upon the health of the inhabitants. Infantile mortality was very high, and the Chairman said that on his visits he received such replies from mothers as: “Buried four, only this one left” ; “Buried six, been married twelve years,” and so on.

Mr. Chamberlain, speaking to the Council in regard to this scheme, emphasised the value of it to the health of the town, and referred to the sanitary evils which had to be remedied. “The town must pay for this state of things,” he said, “in meal or in malt. We must pay in our health or with our money. Which is the better—to keep our money and lose our health, or to keep our health, without which money and life itself are practically valueless?”²

This scheme, of which a long account is given by Mr. J. T. Bunce, took many years to complete.

Sanitation ; Smoke Pollution of the Atmosphere

By the end of the century the sanitary circumstances of all the urban areas of this country were, in many respects, relatively satisfactory. Fifty years of strenuous, if not unremitting, effort had seen the sewerage and draining of practically all towns, large and small, the provision of abundant supplies of wholesome water for the purposes of communal and personal cleanliness and for industry, the paving of streets and alleys, arrangements for the disposal of sewage and refuse, the allocation of land for parks and open spaces, the erection of baths and washhouse establishments, and the appointment of staff to undertake the supervision of food, including meat and milk, and the inspection of slaughter-houses, common lodging-houses and offensive trades. On the credit side of the ledger there were great assets from which large dividends of personal health were obtained. But there were also debits which were by no means inconsiderable. The death rate was steadily falling but the infantile mortality rate remained as high as it had been much earlier in the century. Cholera in epidemic form had vanished from the scene, but typhus and enteric—the one largely due to personal uncleanness, the other to breakdowns in sanitation—still took a large toll of the lives

¹ Bunce, J. T., *History of the Corporation of Birmingham*, 1885, Vol. I, p. 457.

² *Ibid.*, p. 464–5.

and health of the urban population. The victory over smallpox was near at hand but had not been completely attained, while the campaign against venereal disease, discontinued after the failure and repeal of the Contagious Diseases Acts, had not yet been re-commenced.

Although the sanitary conditions in most towns were, on the whole, satisfactory, there were everywhere throughout the urban areas of the country pockets containing perhaps a few, but sometimes hundreds of houses, which were not properly sewered and drained and where the circumstances were little better than they had been fifty years previously. In such areas many outbreaks of enteric fever took place and the reports of the Medical Officer of the Local Government Board are full of such occurrences. Even where the sanitary circumstances were relatively satisfactory the industrial towns, especially in the North of England, were gloomy and sordid places—as many are to-day—with much to depress, and little to delight the eye or minister to the aesthetic needs of man. Blake's "dark satanic mills" were not a mere figment of a poetic imagination.

As we have seen in a previous section (p. 215), the demolition of grossly insanitary property was making very slow progress in all areas largely owing to the reluctance even of the most progressive of local authorities to face the large expenditure involved in purchasing houses and sites after negotiation with the owners. Housing, in the nineteenth century and well into the twentieth, was indeed, the greatest failure of Environmental Hygiene.

Another failure was in connection with the pollution of the atmosphere by industrial and domestic smoke. The first recorded use of coal in this country is vaguely given as taking place in the year 852, and by the thirteenth century this fuel was in use in all the larger towns, creating, when burnt in open grates, much nuisance and great indignation amongst the population. It is recorded that in 1257 Queen Eleanor left Nottingham on account of the smoke nuisance, and in 1273 the use of coal was prohibited in London as being "prejudicial to health." In 1306 a Royal Proclamation was issued prohibiting artificers from using coal and it is said that a man was hanged for disobeying this injunction. Later in the Middle Ages, with the cutting down of the forests, wood became scarce and, in the sixteenth century, the burning of coal for domestic and industrial purposes became common. In 1661 a quaint pamphlet entitled *Fumifugium, or the Smoake of London Dissipated* was issued by John Evelyn, the diarist.

The first interest taken by Parliament in this question was in

1819 when a Committee was appointed to enquire how persons using steam engines and furnaces could erect them in a manner less prejudicial to public health and comfort ; and in 1845 the Railway Clauses Consolidation Act required locomotive steam engines to be so constructed as to consume their own smoke. The Towns Improvement Clauses Act of 1847 empowered local authorities to take action in the case of smoke nuisances ; and the Public Health Act, 1875, contained similar provision. In the report of a Departmental Committee¹ mention is made of the opinion expressed by a Select Committee in 1845 “ that in the present state of knowledge and experience upon the subject, it is not desirable to extend the provision of an Act beyond furnaces used for the generation of steam ” and in the same year Sir Henry de la Beche and Dr. Lyon Playfair reported that “ it cannot for a moment be questioned that the continued emission of smoke is an unnecessary consequence of the combustion of fuel,” but that “ it is useless to expect, in the present state of our knowledge, that any law can be practically applied to the fire-places of common houses, which, in a large town like London, contribute very materially to the pollution of the atmosphere.”²

Special legislation dealt with the metropolitan area in Lord Palmerston's Acts of 1853 and 1856, which empowered the police to enforce provisions against smoke from furnaces used in steam raising, other furnaces employed in factories, public baths and washhouses and furnaces used in the working of steam vessels on the Thames.

Cremation

Among the ancient races the method of disposal of the dead depended to a large extent on the circumstances of soil and climate, and might vary according to the rank of the deceased person. Embalming and cremation were used by the Babylonians and Egyptians but earth burial, exposure to the elements, and interment in caves were methods of disposal employed in various countries from the earliest times.

Sir Thomas Browne, the famous author of *Religio Medici*, brought to the notice of his countrymen the advantages of cremation in 1658,³ but the pioneer in the use of this method in modern times in the British Isles was the wife of the Hon. John Pratt, Treasurer of

¹ Report of the Departmental Committee on Smoke and Noxious Vapour Abatement, 1921, p. 5.

² *Ibid.*, p. 5.

³ In *Hydriotaphia* or *Urn Burial*. In *Christian Morals* Browne says, “ Man is a noble animal, splendid in ashes, and pompous in the grave.”

Ireland, who, dying in 1710, had given directions that her body should be burnt. Cremation was popularised in England by Sir Henry Thompson, who published an article on this method of the disposal of the dead in the *Contemporary Review* in January, 1874, and with a few friends founded the Cremation Society. The early efforts of the Society were for some years frustrated by the Home Secretary, who was personally opposed to cremation and, as a consequence, the crematorium at Woking, built and equipped in 1878, was not actually used for the cremation of human remains until the question of the legality of this practice had been tested in the courts. An opportunity to obtain a judgment on this issue occurred in 1884 when Dr. William Price, of Llantrisant ("the last of the Druids"), aroused public indignation by burning the body of his son in a bonfire on the summit of one of the neighbouring mountains.¹ Price was tried at Cardiff for this alleged offence and was acquitted by Mr. Justice Stephen, whose judgment in this case amounted to a declaration that cremation was legal provided it was carried out without creating a nuisance. This famous judgment of a famous judge established the practice of cremation in this country. The first regular cremation in England took place at Woking on March 26th, 1885.

At first the movement for the establishment of crematoria progressed very slowly. Crematoria were opened at Manchester in 1892, at Glasgow in 1895, and at Liverpool in 1896. The Cremation Society, after several set-backs, succeeded in inducing Parliament to pass an Act for the regulation of cremation in 1902. The first Home Office Regulations in regard to cremation were issued in 1903.

Sewage Disposal

The sanitary reformers who had worked so hard to provide for the construction of drains and sewers, soon had to face the manifold problems of sewage disposal. Evidently the easiest way to deal with sewage was to discharge it into the sea or into the nearest river capable of receiving it ; but there were many communities to which these methods were not available and it was necessary to dispose of their sewage on the land. All these methods were open to grave objection. Untreated sewage discharged into the sea or into a river usually created a serious nuisance, and disposal by irrigation over land required more land than was readily obtainable on the outskirts of a town of any size. Unpurified or imperfectly purified sewage discharged into rivers and streams caused the de-aeration of the water and consequent injury to fish, the putrefaction of organic

¹ *Annual Register*, 1884, p. 2.

matter to such an extent as to produce a nuisance, and the possibility of starting epidemics of infectious diseases of intestinal origin. For many years there was little general agreement on the subject of sewage disposal. One school of thought, which included Chadwick, thought it would be possible to produce manure from sewage, thus giving back to the land what had been taken from it. There was not even agreement as to whether or not there should be separate sewers for the admission of storm-water. Where there is a national problem of great difficulty about which there are several totally different opinions, it will usually be found that a number of Royal Commissions or Select Committees have reported upon it, and this was the case with sewage disposal. With increases in population and improvements in sanitation this problem was every year becoming more acute.

The first of the Royal Commissions to inquire into the subject of the disposal of sewage was in 1857, long before the draining and sewerage of towns had gone so far that the problem had become serious. In 1862 and 1864 there were appointed Select Committees of the House of Commons to enquire into the best methods of utilising the sewage of large towns, including the Metropolis, for agricultural purposes ; in 1865 and 1868 Royal Commissions were appointed to consider the means of preventing the pollution of rivers ; and in 1882 a Royal Commission sat to inquire into and report upon the system under which sewage was discharged into the Thames by the Metropolitan Board of Works.¹ These difficulties arose from the regrettable circumstance of the pollution of the rivers and streams of this country which had been going on steadily since the early days of the Industrial Revolution. Parliament did its best to deal with this subject by passing the Rivers Pollution Acts of 1876 and 1893, which regulated the admission not only of sewage but also of manufacturing effluents into rivers and streams. It was generally agreed that the standard of treatment of sewage before the effluent could be admitted to a river or stream should be sufficient to prevent the creation of a nuisance, but not so as to allow the water to be used for domestic purposes without further purification.

The Supervision of Food

Public Health interest in the food supplies has two purposes,

¹ Fifth Report of the Royal Commission on Methods of Treating and Disposing of Sewage, 1908. This Commission was appointed in 1898, and its Final Report was issued in 1915. Its Eighth Report dealt with the subject of standards as applied to sewage effluents, and the Ninth with wastes from manufactures.

(i) to prevent unsound or diseased food from injuring the consumer, and (ii) to protect the consumer from purchasing food which may be adulterated. In the Middle Ages the State was only interested in the prevention of adulteration of food and in the fixing of standards of quality. The Assize of 1634, for example, provided penalties for selling rusty or corrupted meal ; and in the reign of George IV the addition of alum to bread was made an offence, punishable by a fine.¹ Throughout the course of English history the adulteration of food has given the State considerable trouble and many Acts of Parliament have been passed in an attempt to prevent it. It will suffice perhaps to mention the Adulteration of Coffee Act, 1718, the Adulteration of Tea and Coffee Act, 1724, and the Adulteration of Hops Act, 1733.² A Bread Act which only applied to London was passed in 1822 and another, applying to the whole country, became law in 1836. The Bread Act, 1836, allowed admixtures of different kinds of flours but provided penalties for the use of adulterants, and it required that all bread should be sold by weight.

In 1850 the medical journal, *The Lancet*, appointed a Sanitary Commission to inquire into the adulteration of food and published its findings, which so impressed public opinion that a Parliamentary Commission was appointed to study the subject and, as a result, the Adulteration Act, 1860, was passed. This was amended by the Adulteration Act, 1872. The general effect of this legislation was to make it illegal to adulterate food or drugs or to add to them any injurious ingredients³. Both these Acts proved difficult to administer, and they were superseded by the Sale of Food and Drugs Act, 1875, which permitted the appointment of Public Analysts by the appropriate local authorities. The Sale of Food and Drugs Amendment Act, 1879, made the appointment of Public Analysts compulsory.

Although the subject of the adulteration of food is of some importance in connection with Public Health, that of diseases conveyed through the agency of food is of still greater interest to those whose duty it is to protect the community from noxious influences. We have already seen in connection with the Hendon outbreak of milk-borne scarlet fever (p. 179) that bacteria from cows could be conveyed to human beings through the agency of a commonly consumed foodstuff. It was also known at that time that a parasite called *Trichina spiralis* which, infecting the pig, caused "measly"

¹ Ashford and Savage's *Food and Drugs Act*, 1938.

² There was an Act passed in the reign of James I "for the well garbling of Spices."

³ "And chalk and alum and plaster are sold to the poor for bread,
And the spirit of murder works in the very means of life."

Tennyson, *Maud*.



THE INTERNATIONAL MEDICAL CONGRESS OF 1881

Members of the Congress Being Received by the Baroness and

Mr. Burdett Coutts at a Garden Party at Holly Lodge

pork or ham, could be transferred to human beings, producing a very serious illness which often ended fatally.

Up to the end of the century the question as to whether tuberculosis in man could be contracted from bovine infection was hotly disputed. At the International Medical Congress held in London in 1900 Koch brought forward the view that bovine and human tuberculosis were quite distinct, asserting, as a result of his experiments, that the bacillus of human tuberculosis was unable to give rise to tuberculosis in the ox, and maintaining that bovine tuberculosis could not be the cause of tuberculosis in man.¹ In this view Koch was wrong ; and in the following years a vast amount of evidence was accumulated which showed that bovine tuberculosis could be conveyed to human beings, and especially to children, by the ingestion of tuberculous milk and meat.

It was recognised early in the century that food exposed for sale might either be unsound or actually diseased. Unsound food could be detected by its smell or appearance but it was not usually possible at that time to ascertain, with any reasonable degree of certainty, whether food, and especially meat, was diseased or not. The methods of inspecting meat and other foods in order to ascertain the existence of disease were mainly developed during the earlier years of the twentieth century. Legislation during the nineteenth century, passed to prevent the sale of unsound food, consisted of sections of the Nuisances Removal Act, 1855, the whole of the Nuisances Removal Act, 1863, and sections 116 to 119 of the Public Health Act, 1875.

¹ Second Interim Report of the Royal Commission on Human and Animal Tuberculosis, p. 54. Much of the experimental work of this Commission was done by Drs. Cobbett, Stanley Griffith, Eastwood and Frederick Griffith.

CHAPTER 7

MEDICINE AND VOLUNTARY EFFORT

The Governance of Medicine

We have already noted that the passage of the Medical Act, 1858, was the first step taken by modern governments in this country to bring under control the education and qualification of medical practitioners, and the General Council of Medical Education and Registration of the United Kingdom was accordingly set up for this purpose. Registration included the power to erase from the Register the names of medical practitioners who were guilty of professional misdemeanours, and as the years went by, the General Medical Council evolved a system of “case law” on the subject of professional misconduct which consisted of the principles distilled from the decisions of the Council in connection with cases coming before them. Practitioners might be brought before the General Medical Council in two ways: (i) on conviction in a court of law, and (ii) on a complaint of professional misconduct. Convictions of practitioners in courts of law are reported to the General Medical Council by the police and a *complaint* may be made at the instance of any person, including another practitioner of medicine, who feels aggrieved. The complaint must, however, relate to *professional* misconduct. In the Act the term used is “infamous conduct in a professional respect” and it is not defined, so that the General Medical Council has had to evolve its own interpretation of the meaning of these words—as, owing to its composition, it is fully competent to do. The Council has, however, never given any formal definition of “infamous conduct”, but it has laid down in “warning notices” issued to all practitioners a series of circumstances in which professional conduct will be regarded as infamous. These circumstances are as follows:—(i) the granting of false official certificates ; (ii) the employment of unqualified assistants or the covering of unqualified practitioners ; (iii) the sale of poisons for profit and under cover of a medical qualification ; (iv) the contravention of the Dangerous Drugs Acts ; (v) professional association with unqualified persons or administering anaesthetics, assisting at operations, or otherwise “covering” their action ; (vi) advertising or canvassing, direct or indirect, for the purpose of obtaining patients or promoting professional advantage, or employing agents in such behalf ; and (vii) professional association with uncertified women practising as midwives.

In addition to these examples of misconduct in the course of professional practice a doctor may be brought before the General Medical Council on charges of intemperance, or of immorality with a female patient. A complaint against a practitioner of drunkenness is often associated with charges brought by the police in connection with driving a car while in that condition.

It is to be emphasised that the Medical Act, 1858, imposes no restrictions upon a registered practitioner in regard to the adoption of any theories of medicine and surgery. He may be an allopath or a homeopath or he may adopt any reputable methods of diagnosis and treatment which, in his judgment, appear to be desirable. The General Medical Council has only one method open to it of punishing a practitioner who has been found guilty of infamous conduct in a professional respect, namely, by erasing his name from the Register. It may, however, after a suitable interval, restore a name to the Register if it considers that the practitioner has purged his offence by being deprived of his professional status for a period.

The Medical Act, 1858, had not been on the Statute Book for many years before some of the defects pointed out by Simon (p. 43) began to show themselves. But although it was generally agreed that a further Act was required, the method by which legislation should be brought more into accordance with the requirements of the rapidly developing organisation of medicine was the subject of intense controversy which lasted many years. In 1879 a Select Committee of the House of Commons, and in 1881 a Royal Commission, inquired into the organisation of the medical profession and after a further delay a Bill, introduced by Sir Lyon Playfair, Member of Parliament for the Universities of Edinburgh and St. Andrews, which incorporated most of the recommendations of the Royal Commission, became law as the Medical Act, 1886. This Act did not repeal the previous Medical Act but drastically amended it, in particular, by discontinuing the practice of allowing the registration of a qualification *either* in medicine and surgery, and by imposing a statutory duty upon the General Medical Council to register diplomas in sanitary science, public health or State Medicine. Although any diploma in sanitary science, public health or State Medicine is registrable if it appears to the General Medical Council to be of a sufficiently high standard, the Diploma in Public Health (D.P.H.) has, in practice, been the qualification almost invariably adopted. In the British Isles the first Diploma in Public Health was instituted by Trinity College, Dublin in 1870, upon the recommendation of William Stokes, then Regius Professor of Medicine, and in the United Kingdom by the University of Cambridge in 1875. The

Local Government Act, 1888, made the possession of a Diploma in Public Health or similar qualification necessary for the appointment of Medical Officer of Health of a county or district having a population of fifty thousand or more, and this requirement was later extended to cover all such appointments, if full-time, in any area.

Voluntary Associations

It is not proposed, in this section, to do more than mention a few of the unofficial agencies which have co-operated with hospitals and the Public Health Services during the period dealt with in this book. As long as men live together in societies they will voluntarily associate themselves for many common purposes. These purposes may be the justifiable ones of self-interest, as in the case of the trade unions ; but many societies have been founded which have as their object the care and protection of the weaker members of the community. Charity towards the poor and the needy springs from impulses which are deeply rooted in the human heart ; and organisations for the purpose of bringing aid to those in want have existed as long as recorded history. But charity by itself is not enough in a complicated society unless it is intelligently applied. The multiplicity of charitable societies¹ which sprang up in England in the nineteenth century created, as a necessary consequence of their activities, a swarm of parasites who preferred to live easily, if not too well, on the labours of others. This preference on the part of many to live on the bounty of others, rather than to work, was one of the difficulties that perpetually beset the English Poor Law, and it led to an attitude of suspicion on the part of the administrators which bred all that was harsh and evil in that system. Similarly, in the field of private charity, the resources of benevolence were often wasted on the malingerer and the ne'er-do-well, while the deserving poor, unskilled in the art of mendicancy, remained beyond the reach of their well-wishers. It came to be recognised that a voluntary society rendering aid to the poor must be intelligently directed, and employ workers who were sufficiently well trained to be able to separate the glib but undeserving applicants for relief from those who really needed it. Many of the charitable societies in the large towns, especially in London, overlapped the activities of others, a fact which the skilled applicants for assistance were not slow to recognise. One of the main methods of preventing overlapping was the organisation of bureaux where all kinds of assistance were registered. Perhaps the most important landmark in the history of charitable associations

¹ Referred to by one writer (G. M. Young; *Victorian England*) as "that enormous apparatus of early Victorian philanthropy."



THE EARL OF SHAFTESBURY (1801-1885)

in this country in the nineteenth century was the formation in London of the Charity Organisation Society in 1869. Under the guidance of Mr. C. S. (later Sir Charles) Loch and Mrs. Helen Bosanquet, the Charity Organisation Society gradually brought some kind of order into the chaos of overlapping and competing associations which had done some good, but also much harm, to the poor of London. The Charity Organisation Society stood for private benevolence on the basis of strict inquiry, believing that its methods engendered self-help and self-respect among the poor. It favoured therefore a rigid interpretation of the Poor Law and a reduction in out-relief. The Salvation Army, founded by General Booth in 1878¹, was troubled by few of the scruples of the Charity Organisation Society on the subject of the demoralisation of the poor, and it provided, within its resources, food and lodging for all who appeared to be in need, on the principle that it was necessary to care for the body before saving the soul. Some, like Robert Blatchford, who placed humanitarianism before social theories, condemned the system which allowed grinding poverty at one end of the scale to co-exist with extremes of wealth at the other. All, alike, were appalled at the amount of poverty and semi-starvation which existed in the so-called wealthy England and all—the Poor Law and the many voluntary societies—did their utmost, according to their own social and political conceptions, to apply a remedy.

As might be expected, there were many societies which had as their object the care of children. The Liverpool Society for the Prevention of Cruelty to Children was founded in 1883 and the National Society, with a similar purpose, in 1889.² The Ragged School Union, later called the Shaftesbury Society because of the great interest Lord Shaftesbury displayed in it throughout the greater part of his life, consisted of a number of day and Sunday schools expressly provided for the children of those who were unable to pay any fees. Out of the further needs of these children grew the National Refuges for Homeless and Destitute Children, now called the Shaftesbury Homes and the *Arethusa* Training Ship, and the Reformatory and Refuge Union, later known as the Children's Aid Society. During the period from 1882 onwards, there were

¹ The Salvation Army developed out of the East London Mission which was commenced by William Booth in 1865.

² Liverpool was the first town to form such a society, followed by London, Manchester, Glasgow and Edinburgh in 1884. The formation of the National Society arose from the action of the London Society in 1889, which led to the amalgamation of all similar societies, with the exception of two, namely, the Liverpool and the Birkenhead and Wirral Societies, which decided to remain apart from the new National body.

founded Dr. Barnardo's Homes, the National Children's Home and Orphanage and the Waifs and Strays Society. The first was un-denominational, while the other two were founded by the Wesleyan Church and the Church of England respectively. Neither the Wesleyan Church nor the Church of England, however, restricted the admission of children to those belonging to its own denomination. Barnardo was a man of strong character and principles and the series of homes which he founded and governed for so many years contained, apart from Poor Law institutions, more destitute children than any other organisation in the country. It was in response to his appeals that Parliament passed the Custody of Children Act, 1891—the first to override the principle of parental responsibility, by empowering the courts to transfer parental rights to guardians.

We have already referred to the Manchester and Salford Sanitary Association founded in 1852 for the purpose of disseminating a knowledge of the laws of health, and voluntary societies of a similar kind were formed in many other areas. These two towns were also prominent in connection with the organisation of a Ladies Sanitary Reform Association in 1872.

The Sanitary Institute.—An important event in the history of voluntary societies associated with Public Health was the founding in 1876 of the Sanitary Institute, the activities of which finally superseded those of the unco-ordinated local societies. As the Sanitary Institute played a considerable part in Public Health progress, through the agency of its training courses and its annual Congresses, it deserves more than a passing mention. The idea of founding such an institute appears to have occurred to the mind of Dr. Lory Marsh who, with the consent of Mr. Bailey Denton, C.E., and Mr. C. F. Gardner published in the *Lancet and Sanitary Record* in July, 1876, an advertisement soliciting general support for the project. The response was so favourable that Marsh was able to convene a largely attended meeting at the St. James's Hall, London, on July 13th, 1876, at which the Duke of Northumberland was in the chair. As a result of this meeting the "Sanitary Institute of Great Britain" was founded and Dr. Lory Marsh was appointed Chairman of the organising committee.¹ The main purposes of the Institute were:—

- (a) To hold meetings at which papers could be read and discussed.
- (b) To watch all measures introduced to Parliament relating to Public Health.

¹ A detailed account of the founding of the Sanitary Institute in 1876 is given in the Jubilee volume, issued by the Royal Sanitary Institute in 1926.

- (c) To obtain a charter for the purpose of examining and granting certificates of qualification to Surveyors of Sanitary Districts and Inspectors of Nuisances.

In this way there began the long career of usefulness of the Institute. Throughout, it has been supported by men who were prominent in the Public Health Service and in the medical profession and it was due to the loyal backing of Sir Edwin Chadwick, Sir Benjamin Ward Richardson, Professor E. A. Parkes, Dr. William Farr, Sir George Buchanan, Professor W. H. Corfield and many others that the Sanitary Institute developed so rapidly and attained to a position of such influence in the counsels of the Government and the local authorities. Its functions as an examining body, granting certificates of competence to Local Surveyors and Inspectors of Nuisances, were to prove of great value to local authorities anxious to attract to their service fully qualified sanitary staffs and, as the years went by, more and more officers of local authorities gained the coveted qualification of the Institute. The first of these examinations took place on October 29th, 1877, when, according to the report, certificates were granted to 5 out of 8 candidates. In 1894 the examination for Surveyors was discontinued and this duty was taken over by the Institute of Municipal and County Engineers. Women were trained in large numbers at that time for the sanitary inspector's certificate and there was a wide field for their services in the inspection of factories and workshops employing female labour. An important development took place in 1908 when the Institute founded an examination for Health Visitors and School Nurses, and since 1925 this examination has been regarded by the Ministry of Health as the single qualification for these appointments. In 1922 the examining body for the Sanitary Inspector's certificate was reconstituted under the title of "The Royal Sanitary Institute and Sanitary Inspectors Examination Joint Board."

The Founding of the British Medical Association.—In Part I, Chapter 2, and the earlier part of the present chapter some account is given of the Acts of Parliament and the organisation arising from those Acts, which govern the medical profession from the educational and disciplinary points of view. The Medical Acts of 1858 and 1886, and the General Medical Council which the first of these Acts established, constitute the basic foundation on which medicine, as a profession, is built. Many of the activities of the profession, however, are of a medico-political nature and can only be carried on by the formation of a voluntary association of medical men and women for the purpose of expressing the corporate will. Such a need for an organ of corporate expression was felt early in the

nineteenth century, when medicine, with the beginnings of interest in communal health, was becoming of immediate importance to the State, and it was met by the founding of the British Medical Association, under another name, in the year 1832.

The man whom the profession of medicine honours for the part he played in forming the first permanent association of its members, was Sir Charles Hastings and he was born on January 11th, 1794, being the sixth son of the Rev. James Hastings, Rector of Bitterley, in Shropshire. Hastings graduated in Medicine at Edinburgh in 1818 and he held the appointment of physician to the Worcester Infirmary for forty years. During the year 1828 Hastings and some of his medical friends founded a journal called the *Midland Medical and Surgical Reporter*, and from this arose the Provincial Medical and Surgical Association—the fore-runner of the British Medical Association.¹ The Provincial Medical and Surgical Association, founded in 1832, with Hastings as Secretary, gained influence and repute, both in the profession and outside, with the passing of the years, and in 1856 the important step of changing its name to that of “The British Medical Association” was taken. For a long period the medical profession had been urging Parliament to take steps to compile a *Medical Register*, and when in 1858 the Medical Act was passed, Hastings became one of the Crown nominees on the General Medical Council, serving in that capacity from 1858 to 1863.

Sir Charles Hastings lived to see the British Medical Association become the recognised organ for the expression of the views of the profession. He died in 1866 at the age of 72 and was buried in Astwood Cemetery, Worcester, next to his wife, who died a few months before him.

In 1844 the *Provincial Medical and Surgical Journal* became the recognised official organ of the Provincial Medical and Surgical Association, and in January, 1853, the name of the paper was altered to the *Association Medical Journal*, in order to emphasise the new policy. Its final name of *British Medical Journal* was adopted on January 3rd, 1857, to bring it into accord with the changed title of the Association.²

The British Medical Association is one of the oldest of the existing voluntary organisations concerned with Public Health and social welfare, and its influence upon the development of such services

¹ Article in the *British Medical Journal*, July 23rd, 1932, p. 161.

² It may be mentioned here that two other medical journals, still in existence, were founded during the first half of the nineteenth century—the *Lancet* in 1823 and the *Medical Press* in 1839.

as National Insurance, School Medical Inspection, and Tuberculosis has been very great.

The Society of Medical Officers of Health.—The history of this society dates back to within a few years of the inception of the Public Health Service, and some of the names on the list of the earlier Presidents, such as John Simon, Burdon Sanderson, Buchanan, and Stevenson, were amongst those who were prominent in the early stages of sanitary progress. Although the first Medical Officer of Health was appointed in a provincial borough, many years were to elapse after the passage of the Public Health Act, 1848, before this example was followed in more than a few of the extra-metropolitan towns. In London progress in the appointment of Medical Officers of Health to metropolitan districts was accelerated by the passage of the Metropolis Management Act, 1855, and by early in 1856 as many as forty-eight of these appointments had been made. These officers, working on similar problems in districts situated within easy reach of each other, soon began to feel the need of association with their fellows. The leading spirit in this desire for some formal method of association was Dr. F. W. Pavy, of the district of St. Luke, Middlesex, and on April 23rd, 1856, he called a meeting of his colleagues at his house to consider the desirability of founding a society of the Medical Officers of Health of the Metropolis. At a further meeting held on Tuesday, May 13th, 1856, those present came to the important decision to form the Metropolitan Association of Medical Officers of Health. This date is therefore regarded as that of the founding of what is now called the Society of Medical Officers of Health.

After the passing of the Public Health Act, 1875, the number of Medical Officers of Health in the provinces rapidly increased. In February, 1875, the North-Western Association of Medical Officers of Health was founded ; and a little later in the same year there were formed similar associations designated by the titles “ Northern Counties,” “ Yorkshire ” and “ Birmingham and Midland.” At that time there was no formal bond between these associations, but they soon formed the admirable custom of holding joint meetings between themselves. The further step of full amalgamation did not take place until late in the following decade, and it followed the suggestion of Dr. A. Hill, Medical Officer of Health of Birmingham, then President of the London Society, in 1887. In that year the London Society and the three surviving extra-metropolitan associations, namely, the North-Western, Yorkshire, and Birmingham and Midland, agreed to accept Hill’s suggestion and combine themselves into one society, which was called the Society of Medical

Officers of Health and was incorporated under the Companies Acts in 1891. The first number of the journal of the Society—*Public Health*—was published in May, 1888.

A survey of the activities of the Society of Medical Officers of Health during the eighty years following its establishment as the Metropolitan Association in 1856, would be the equivalent of surveying the history of Public Health. More and more, as time went on and the Society became better known, it was consulted by Government Departments in connection with the large amount of sanitary legislation which was passing through Parliament, and with the detailed administrative procedures required to bring it into operation. The Society was, from its inception, interested in Vital Statistics and it was a source of satisfaction to its members when, in January, 1857, the Registrar-General began the compilation and circulation of the weekly returns of deaths. Indeed, during its history, the Society of Medical Officers of Health has enjoyed as close an association with the Registrar-General's Office as with the administrative Government Departments. Farr was a Vice-President from 1866 to 1868 and Stevenson President from 1877 to 1879.¹

The list of distinguished Presidents of the Society is a long one. The first was John Simon (1856–61), but amongst his successors were Sir George Buchanan (1875–77), and Sir Arthur Newsholme (1899–1900), Medical Officers of the Local Government Board, Sir Shirley Murphy (1891–93) and Sir Allen Daley (1947–48), Medical Officers of Health to the L.C.C., Professor E. W. Hope (1912–13), Medical Officer of Health of Liverpool, Sir John Robertson (1916–17), Medical Officer of Health of Birmingham, and Sir William Savage (1935–36), Medical Officer of Health of Somerset.

The first paid Secretary of the Society was Mr. G. S. (later Sir George) Elliston who was appointed in 1919 and retired in 1930. Sir George Elliston was Member of Parliament for Blackburn from 1931 to 1945 and he founded the *Medical Officer* in 1908. He was succeeded in the office of Secretary by his son, Mr. G. L. C. Elliston, M.A., who was appointed in 1930.

District Nursing Associations.—District nursing was one of the earlier of the voluntary services associated with Public Health and it owes its inception to Mr. William Rathbone, of Liverpool, who, in 1859 appointed a nurse to undertake duties among the poor people of the borough. The nurse whom he first appointed was Mrs. Robinson who had attended Mrs. Rathbone in an illness, and her reports of the great need for such services in the slum quarters of

¹ Jubilee number of *Public Health*, 1906. The historical part of this volume was written by Dr. Reginald Dudfield, then M.O.H. of Paddington.

the town induced Mr. Rathbone to establish a proper system of district nursing in Liverpool. There is an interesting book published under the auspices of Mr. Rathbone in 1890, which has for its title *Sketch of the History and Progress of District Nursing* and was dedicated, by permission, to Her Majesty, Queen Victoria. The Queen, who took a keen interest in district nursing, had generously decided to devote to this purpose the bulk of the money presented to her by the women of England on the occasion of her Jubilee in 1887 ; and the book receives an added interest by the fact that it contains a preface by Florence Nightingale, who advises how the nurse should carry on her duties and what kind of a woman she should be. “Now let each district nurse ‘in quietness and in confidence,’ directly serving her Queen, her country and her God—always striving forward in humility to greater efficiency, find her strength.” “A great physician was heard to say when asked how he treated pneumonia ‘I don’t treat pneumonia, I treat the person who has pneumonia.’ If this is true in medicine, how much more true is it of medicine’s servant—nursing.” “A good nurse must be a good woman, with sympathetic insight. She cannot be a good nurse without.”

The authors of this little book describe the beginnings of district nursing in Liverpool—the poverty of the homes, the value of the nurses’ services, often making the difference between life and death, and the educative value of the nurses’ work. One of the difficulties was the extreme scarcity of trained nurses. All those trained at the Nightingale School at St. Thomas’s Hospital were urgently required in the voluntary hospitals and none could be spared for district nursing. Miss Nightingale’s solution was the formation of a school of nursing in Liverpool ; and this suggestion was adopted and, in connection with the Royal Infirmary, the Liverpool Training School and Home for Nurses was founded for the purpose of providing nurses for the hospital, for the district and for private families. The organisation of districts was on the basis of parishes or groups of parishes and in each district a lady, or committee of ladies, was appointed to superintend the work. There was engaged, in addition, a Lady Superintendent, whose duty it was to visit, in person or by deputy, all cases under treatment. The nurse “was exhorted to regard as sacred any knowledge of family matters which might come to her in the course of her duties, to avoid and discourage scandal, and especially to interfere in no way with the patient’s or other people’s religious opinions.” One forward step of value was taken when arrangements were made for the accommodation of groups of district nurses in homes where

they lived under the charge of matrons. So great was the progress made in Liverpool that, within four years of the commencement of the scheme, eighteen districts had been organised. One of the beneficial results of the appointment of district nurses was the favourable influence which was exerted upon the standard of nursing in workhouse infirmaries. It will be remembered that the Metropolitan Poor Act, 1867 (p. 106), had inaugurated drastic reforms in the London Poor Law infirmaries and the introduction into workhouse hospitals of trained nurses grew directly out of the experience gained from the nursing of the poor in their own houses.

The example set by Liverpool in founding a system of district nurses was followed by the formation of the Manchester and Salford Association in 1864, the Leicester Association in 1867, and the East London Nursing Society in 1868. Birmingham appointed its first district nurse in 1870, and Glasgow in 1875. The Metropolitan and National Nursing Association, founded in London in 1874, commenced the practice of giving the trained nurses employed special training in district work.

The organisation of district nursing was placed on a national basis by the formation of a Committee, headed by the Duke of Westminster, Sir Rutherford Alcock and Sir James Paget, which, with funds provided by the Jubilee offering to Queen Victoria in 1887, founded under Royal Charter the Queen Victoria Jubilee Institute for Nurses. Further funds were obtained at the Diamond Jubilee in 1897, and on the death of Queen Alexandra, from the money contributed as a memorial to her. In 1925 the name was changed to the Queen's Institute of District Nursing.

PART III

THE PERSONAL HEALTH AND SOCIAL SERVICES— PERIOD OF PREPARATION, 1900-7

By the end of the century the great feats of sanitary engineering had been accomplished and, as a result, the crude death rate and especially that part of it which was due to infectious diseases of intestinal origin, had notably declined. Nevertheless, the sanitarians and those engaged in social work, accustomed to surveying the social and industrial scene with a critical eye, were not entirely satisfied. They pointed to the high infantile and maternal mortality rates which had remained unsatisfactory for many years, and they drew attention to the unfavourable reports of the Army authorities on the medical inspection of recruits to the Service. It became clear to those in official or voluntary circles who possessed any responsibility for the maintenance of the Public Health that the steps taken during the preceding half century to clean up the environment of the urban areas of this country, while of great value, were not sufficient by themselves to secure an adequate standard of physical fitness amongst members of the working classes.

Part III therefore contains an account of a new orientation of thought towards the problems of Public Health. Commencing as a purely Public Health movement before the close of the century, the new conception of the duty of the community towards its poorer members widened until in the course of the years it embraced the manifold activities of the modern state in the direction of Personal Hygiene, Social Insurance and Social Medicine. The early stages of the development of the Personal Health Services were, however, slow and gradual. This part of the book therefore deals with the modest beginnings of the maternity service, child welfare and the medical inspection of school children, and that is its principal subject. But, in accordance with the general scheme, this part deals in their chronological order with other happenings and developments which affected, directly or indirectly, the health of the people. Such subjects include factory legislation, the Poor Law, medical research and the embryonic social services. The social services were destined to grow to huge proportions, pervading the whole life of the nation, but during the early years of the century they were merely in the initial stages of their development. Because of its future importance, a good deal of attention is devoted to the famous Royal Commission on the Poor Laws, which, in its Majority and Minority

Reports, probed to their very roots the principles and practices of that ancient service.

Lastly, to conclude this introduction to Part III, an account is given of some typical epidemics, including the last nation-wide outbreak of the age-long scourge of smallpox and mention is made of some of the international conferences on Public Health, concerned mainly with the more serious of the infectious diseases.

CHAPTER 1

EARLY STAGES IN THE DEVELOPMENT OF THE PERSONAL HEALTH SERVICES

When the twentieth century dawned, the Public Health Service had been in existence for fifty-two years¹ and it had some signal triumphs to its credit in the field of sanitation. A comprehensive code of laws had been gradually evolved which controlled in great detail the activities of local authorities in regard to such matters as sanitation, the supervision of the food, milk and water supplies, and the inspection of dwellings, lodging houses, offensive trades, canal boats, factories, etc. The cleanliness of the towns was assured by the abundant supplies of pure water which the engineering feats of the last half of the nineteenth century had rendered available ; and amenities such as parks, open spaces, public baths, libraries, museums and art galleries, were the common property of the citizens in all but the smaller centres of population. The efforts of the community towards the improvement of the Public Health, aided by a gradual rise in the standard of living, had had the effect of reducing the death rate from 22.7 in the period of 1851–5 to 17.7 in the period 1896–1900, and the mortality from tuberculosis from 3.6 to 1.9. It is, no doubt, proper to assume that such a large improvement in mortality rates affords an indication of some value that the standard of general health in the community had also risen. Other factors, favourable to an improvement in the health of the people, were present, notably the developing system of primary education and the very complete code of factory legislation which enabled the Home Office to exercise a careful supervision over the conditions of work in industry.

As against the favourable circumstances referred to, there were a number of disquieting symptoms which caused concern amongst social workers and in the Public Health departments throughout the country. We have already mentioned the investigations carried on in London from 1889 onwards by Charles Booth, and in York in 1899 by B. Seebohm Rowntree, into the social circumstances of the working classes, as a result of which it was shown that a substantial proportion of the labouring population in both towns was living on incomes below the “poverty line.” If the results of the investigations of Booth and Rowntree were applicable to other towns—and there was no reason to suppose that they were not—then it was

¹ Since the passing of the Public Health Act, 1848.

evident that the standard of nutrition of, at least, the families of the poorer members of the working classes must be much below that necessary for health and physical fitness. This evidence was, however, indirect ; but there were facts of a more positive nature which bore on the problem of the standard of nutrition of the more poorly paid members of the working classes. Figures given by the Director-General of the Army Medical Services and the Inspector-General of Recruiting indicated that nearly 40 per cent. of all the recruits examined in the years 1901 and 1902 were, for one reason or another, unfit for Army service. The major defects which led to rejection were given as: want of physical development ; defective vision ; disease of the heart ; and bad dentition.¹ There was some doubt as to whether the figures submitted by the Inspector-General of Recruiting indicated a deterioration of the standards of physical fitness as compared with previous years ; but these figures, and much other evidence given to the Inter-Departmental Committee on Physical Deterioration, confirmed the belief of many social workers, including those who had had experience of children in elementary schools, that the state of nutrition of the families of the labourers in the towns was highly unsatisfactory. Many witnesses referred to the fact that children went to school without breakfast and some appeared to be so under-nourished that they were unable to make adequate progress in their lessons. Evidence was also given that, in the children of the poorer families, there were many cases of skin diseases, pediculosis and debility and anæmia, and that these conditions, and the poorness of the clothing and—often—the absence of boots or shoes, gave much concern to the teachers in the schools.

The recommendations of the Inter-Departmental Committee are of importance because during the course of the next twenty years many of them were accepted by successive Governments and embodied in legislation. Some of these recommendations are as follows:—

The organisation of an Anthropometric Survey.

The fixing of a standard in regard to overcrowding.

Enforcement of the law against the pollution of the air by smoke and noxious vapours in manufacturing districts before a stipendiary magistrate.

¹ Report of the Inter-Departmental Committee on Physical Deterioration 1904, Vol. 1, p. 5. Amongst those who gave evidence to the Committee were:—Professor D. J. Cunningham, the famous anatomist, of Edinburgh ; Dr. Alfred Eichholz of the Board of Education ; Mr. C. S. Loch, Secretary to the Charity Organisation Society ; Dr. Shirley F. Murphy, Medical Officer of Health of the London County Council ; and Dr. James Niven, Medical Officer of Health of Manchester.

Appointment of full-time Medical Officers of Health in all areas above a certain population—to be removed only with the consent of the Local Government Board.

Inspectors of Factories and Medical Officers of Health to have, to some extent, co-ordinate powers with regard to insanitary conditions in factories.

Instruction to be given in schools about the effects of alcohol on physical efficiency.

Local Government Board to fix standards of purity for all foods and drinks.

Still-births to be registered.

Systematic instruction in continuation classes of girls in the processes of infant feeding and management.

The training of mothers by Health Societies on the lines of the methods of the Manchester and Salford Ladies' Health Society.

Instruction to elder girls in cookery, hygiene and domestic economy.

The systematic medical inspection of children at school to be imposed as a statutory duty on every school authority.

Provision for the feeding by local authorities of school children, under safeguards against economic abuse.

The organisation of existing institutions for the welfare of boys and girls.

Lessons in the care of the teeth should be given in the schools and a systematic medical inspection of teeth, eyes and ears should be undertaken as part of the medical examination already recommended.¹

The information as to the condition of health and fitness contained in the three volumes of the report of the Inter-Departmental Committee confirmed what had been said in a report issued by the Royal Commission on Physical Training (Scotland) the previous year, and the recommendations of the two bodies were on similar lines.

Apart, however, from the formal reports of bodies such as these, there were other indications that the health of the community at the end of the nineteenth century, after fifty years of sanitary effort, was, in part at least, unsatisfactory ; and the more the condition of the poorer classes in the community was investigated the greater was the evidence of departure from satisfactory standards. The reports of the Certifying Factory Surgeons on the young people examined before entering on employment in factories emphasised

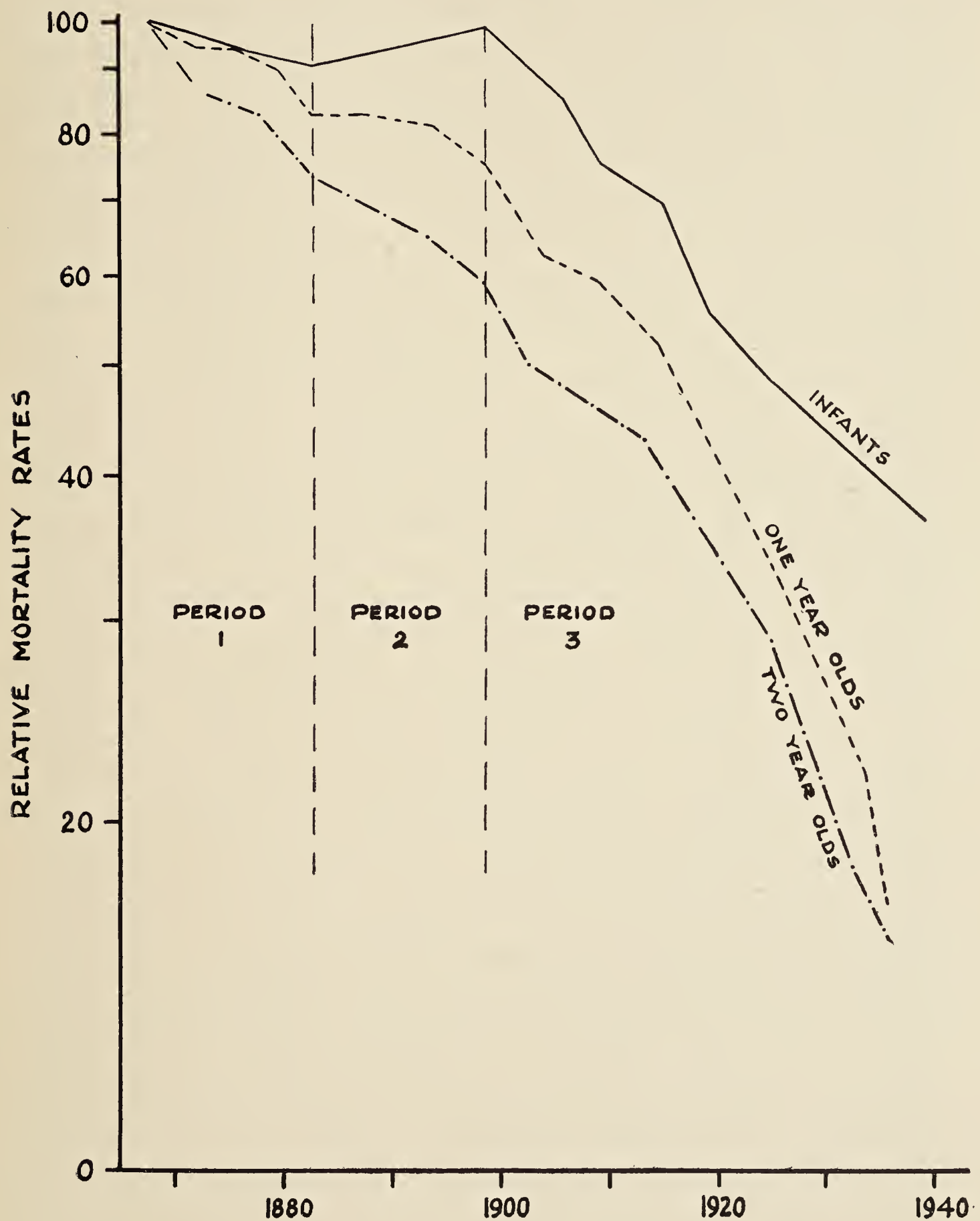
¹ Report of the Inter-Departmental Committee on Physical Deterioration, 1904, Vol. I, pp. 84-92.

the poor physical development of many adolescents, not only from the ranks of the poorest sections of the working classes, but also from families whose standards of life were well above the poverty line. There was as yet no organised system for the medical inspection of children attending elementary schools, but the reports of both teachers and the voluntary workers on care committees in London and some of the provincial towns drew attention to poor clothing, skin diseases due to dirt and—in the schools in slum districts—the obvious and largely prevailing malnutrition of the children. Further evidence to the same effect came from medical officers whom some of the School Boards, notably in London, Bradford and Salford, had appointed before the end of the century.

It has already been said that the part of the vital statistics which showed no sign of improvement up to the year 1900 was the infantile mortality rate. This figure had remained at 150 per thousand births from the early part of the century and showed no evidences of becoming lower in spite of fairly efficient sanitary arrangements in most of the urban areas. During the quinquennium 1901–5, however, the average infantile mortality rate for the country as a whole dropped to 138, but there were wide differences in the figures for the various districts. Some of the towns where conditions were relatively favourable showed infantile mortality rates much lower than the average for the country, whereas the great manufacturing towns in the North and Midlands, with few exceptions, returned excessively high figures, the publication of which caused grave disquiet, and became, in most places, an efficient stimulus towards local action. Towns with relatively favourable infantile mortality rates, in the year 1906, were Brighton (111), Southampton (113), Derby (115), Halifax (115), Bristol (127), East Ham (128), and London (131). At the other end of the scale, in the same year, there were Burnley (212), Preston (199), Stockport (186), Liverpool (172), Birmingham (168), Manchester (167), and Hull (160). Some of the reports of the Medical Officers of Health during the 'nineties showed an awareness of the fact that sanitary measures had taken the country a long way towards improving the health of the people, but that there were many problems of Public Health which could only be solved by an entirely new approach. Advancing medical knowledge was finding new evidences of the ravages of venereal diseases ; tuberculosis, both of the lungs and of bones and joints, was taking a serious toll of the lives and health of many members of the community, and little was being done either to prevent or to cure this disease ; maternal mortality was high and the number of still-births showed no signs of decreasing ; and the condition of children, both at school

and below the age of school attendance, had aroused the serious concern of doctors, clergy, teachers and social workers.

Although the facts about the conditions of health of many groups of the population had become fairly well known to the Government



CHANGES IN INFANT MORTALITY IN ENGLAND AND WALES
COMPARED WITH DEATH-RATES AT AGES 1-2 AND 2-3.
LOGARITHMIC SCALE, RATES IN 1866-70 TAKEN AS 100.

FIG. 3

and to all those who were interested in the social welfare of the people, there was, during the earlier years of the twentieth century, little agreement about the means which should be employed for the purpose of preventing disease and states of sub-normal health among expectant and nursing mothers, infants during the first year of life, and children of and under the age for school attendance. There were, however, indications as to how some of these problems might be solved in the past history of this country and in the experiments which were being conducted by doctors and social workers in France, Italy and Germany on the care of the expectant mother, the feeding of the infant and the supervision of the health of children attending school. The Government also had at its disposal the report of the Inter-Departmental Committee on Physical Deterioration and the most valuable and important recommendations which this Committee had made. The Committee had reported in 1904 but some years were to pass before legislative effect was given to the more important of its recommendations. One of the recommendations, namely, that relating to child welfare, was only brought into full legislative operation, and then in a much improved form, in 1918.¹ This was not, however, the first Act of Parliament passed to deal with the welfare of the child, for in 1872 there appeared the Infant Life Protection Act, the purpose of which was to deal with the practice of "baby farming," particularly prevalent in the 'seventies and 'eighties of last century. In one case—that of Mrs. Waters, who was later hanged for murder—the police discovered seven children between one month and six months old hidden under some rags on a sofa in her house, done to death with a mixture of laudanum, lime, corn-flour, water, milk and washing powder.² The Infant Life Protection Act, 1872, only extended a limited measure of protection to children under the age of one year, but after some years of agitation by public bodies, especially by the London County Council, a further Act was passed in 1897, raising the age limit to five years and requiring notification to the Council where a child under two years was adopted for £20 or less.³ Infant Life Protection Acts are, of course, a special and limited case and, apart from the efforts of voluntary societies, national arrangements for dealing with the health of the infant and the young child were long delayed. There were, by the end of the century, many general hospitals and not a few special hospitals where disease in children was efficiently

¹ Maternity and Child Welfare Act, 1918.

² Gibbon, Sir Gwilym, and Bell, R. W., *History of the London County Council*, p. 295.

³ *Ibid.*, p. 295.

treated, but, until the appointment of Newsholme as Medical Officer, the Local Government Board was exceptionally slow in recognising that high infantile mortality (which even for the quinquennium 1901-5 was, for England and Wales, at the rate of 138 per thousand births) could be prevented. In Simon's day the two chief factors in infantile mortality were said by him to be sanitary defects in the home and the occupation of the mother in industry. During the early years of the twentieth century the principal causes of the death of infants were epidemic diarrhoea, immaturity and prematurity, and bronchitis and pneumonia. Sanitary measures, if by this phrase we mean a clean environment and satisfactory housing of the people, would have gone very far to reduce infantile mortality if they had become really efficient. The trouble with the sanitary measures of the nineteenth century was that they were efficient enough to cope with the grosser diseases of intestinal origin, mainly affecting those in the older age groups, such as typhoid, cholera and dysentery, but not sufficiently so to prevent the breeding of flies in manure heaps and other collections of organic refuse thus infecting infants with diarrhoea. If the cause of epidemic diarrhoea had been known during the later years of the nineteenth century this most fatal source of infantile mortality could have been reduced by sanitary measures. Satisfactory housing would have reduced infantile mortality still further. But when perfect sanitation had done its utmost, there would still have remained a large number of infantile deaths due to non-sanitary causes and these, in the early years of the twentieth century, could only have been prevented by the education of the mother, perhaps on the lines adopted by the Manchester and Salford Ladies' Health Society, by the provision of satisfactory substitutes for breast milk in cases where the mother's supply failed or was insufficient, and by attention to the health and nutrition of the mother both before and after the confinement. These measures were not, unfortunately, adopted on a nationwide scale until after 1918 and this method of reducing infantile mortality was neglected by the State up to that time.

The history of efforts to promote the care and welfare of the mother is, in some ways, not as regrettable as is the case in connection with the infant and the young child, because attempts to reduce maternal mortality were made much earlier. We have discussed in a previous chapter the discoveries made by Oliver Wendell Holmes in the United States and Semmelweiss in Vienna on the subject of puerperal sepsis which had the final result, when generally accepted by the medical profession, of reducing maternal mortality in hospital to a fraction of what it originally had been. In all countries,

however, women had been accustomed to being confined at home with such attention as untrained and ignorant midwives could give them. Until the eighteenth century, midwifery was outside the sphere of practice of the doctor and was the admitted preserve and monopoly of the untrained midwife for whose services there were often substituted the ministrations of the less experienced neighbour. The physicians were not, however, entirely without interest in the art of obstetrics and the famous Ambroise Paré in the sixteenth century introduced some improvements in the handling of difficult labours including version in shoulder presentations.¹ The introduction of midwifery forceps by members of the Chamberlin family and, more than two centuries later, the use of anaesthetics in labour, opened the field of obstetrics to the physician.

The first of the lying-in hospitals, in the British Isles was the Rotunda, opened in Dublin by Dr. Bartholomew Mosse in 1745. This was followed by the Queen Charlotte's Hospital in London, established in 1809.

The Midwives Act

Prior to 1902 midwives were, as we have said, entirely untrained and some, of the Sairey Gamp type, were, in addition, dirty, dishonest and intemperate. It is easy to exaggerate these features in the conduct of the midwife of the nineteenth century, and there is little doubt that her principal defect was that she was untrained and unsupervised and a willing repository of all the harmful superstitions about child-birth which only time and training would be able to eradicate. There is no reason to suppose that the proportion of difficult labours at that time was less than is the case now but in the hands of an untrained midwife, no matter how experienced she might be, the fate of the mother in such circumstances was not a very happy one. Such considerations are emphasised by the statistics, which show that during the middle years of last century the maternal mortality rate was 6.7 per thousand, falling in the next twenty years to between 4 and 5 per thousand, increasing to 6.9 in 1874, and again falling to 4.7 in the period 1881-90² At the present time the maternal mortality rate is about 1.00, but much of the reduction in recent years is due to the introduction of the sulphonamides and penicillin which give the obstetrician far more control over sepsis.

¹ The great William Harvey, who demonstrated the circulation of the blood, is regarded by some as the "father" of English midwifery. In *De Generatione Animalium* he discussed "conception" and labour. See Newman's *The Building of a Nation's Health*, p. 284, Note.

² Newman, Sir George, *The Building of a Nation's Health*, p. 282.

It was therefore a great gain to Public Health when Parliament was persuaded, not without difficulty, to pass the Midwives Act, 1902. This Act may be regarded as the starting point of all the legislation which has been passed in the present century, not only for the care of the mother but also of the infant—legislation which has been, on the whole, well administered by the local authorities to which it has been entrusted.

By far the greater part of the credit for the introduction of the Midwives Act, and for its administration in the years which followed, is due to Sir Francis Champneys (1848–1930). Educated at Brasenose College, Oxford, and at St. Bartholomew's Hospital, Champneys was appointed in 1880 assistant physician to St. George's Hospital and in 1885 was promoted to the senior post of obstetric physician. He was also obstetric physician to the General Lying-in Hospital, York Road, where, faced with serious outbreaks of puerperal fever, he introduced Lister's antiseptic methods with spectacular success. In 1890, following the death of the great obstetrician, Matthews Duncan, Champneys was appointed physician accoucheur to St. Bartholomew's Hospital. At this time the reform closest to Champney's heart was a radical alteration in the training and qualifications of midwives, most of whom were of the "handy-woman" type. His proposal to establish compulsory training and registration in connection with all women practising midwifery was not received with favour by a traditionally conservative medical profession, and Champneys waged an uphill fight for some years before he was able to persuade the Local Government Board to introduce the Midwives Bill.

The Midwives Act, 1902, passed for the purpose of securing the better training of midwives and regulating their practice had, as its main feature, the formation of the Central Midwives Board,¹ whose duties were to keep a roll of midwives and to make rules for the course of training, the conduct of examinations and the admission to the roll of the names of those who fulfilled the conditions laid down, including those already in practice at the time of the coming into force of the Act. Other duties of the Central Midwives Board were the issue of rules regulating the practice of midwives, the annual publication of the roll and the consideration of penal cases. Various sections of the Act forbade the use of the name "midwife" to any woman not duly certified and the attendance by her "habitually and for gain" on women in childbirth except under the direction of a qualified medical practitioner. Local supervising authorities were

¹ Sir Francis Champneys was the first chairman of the Central Midwives Board. He continued in that office from 1902 until his death in 1930.

the councils of counties and county boroughs, which were required to investigate charges of malpractice and negligence against midwives and to keep a list of midwives notifying their intention to practice in their areas.

Administratively, the art of the midwife was now placed upon a satisfactory basis and the long process of training a sufficient number of new entrants to the profession began. The Act had elevated the hitherto despised occupation of midwife to the status and dignity of a profession. Midwives would no longer be allowed to practice as they pleased without responsibility to anyone except their patients. They would be required to conform to the Rules of the Central Midwives Board in their practice and they would be subject to the supervision and, if necessary, admonition of the inspectors, lay and medical, of the local authorities. As is always the case in the years following the formation of an exclusive professional roll or register, difficulties were experienced with the untrained persons necessarily admitted because, in the case of many of them, the standard of practice was low in comparison with that of the newly trained. This was not invariably so, as a few of the *bona fide* midwives, admitted to the roll in 1902, had reached good standards of work as a result of natural aptitude and experience. The untrained type of midwife became reduced in numbers as the years went by and there were comparatively few left when the amending Act of 1918 came into force ; and, in the meantime, the hospitals and the developing Public Health Departments were training sufficient midwives to cope with the expanding requirements of the third and fourth decades of the twentieth century.

It may be fitting to close this section on the Midwives Act, 1902, by quoting the requirement in Section 17, the Factory Act, 1891, in regard to the employment of women, as follows : " An occupier of a factory or workshop shall not knowingly allow a woman to be employed therein within four weeks after she has given birth to a child." This requirement was repeated in the Factory Act, 1901.

The Beginnings of Child Welfare

The study of the child in health and disease has a long history behind it, dating at least to the days of Soranus of Ephesus in the second century, and it will only be possible here to mention some of the work done on this subject during the later part of the nineteenth century. Much of the work of investigating the physiology and pathology of the young child at this time was done by French and German physicians but some of the advances in our knowledge

of paediatrics were due to British scientists. In 1878 Friedrich Ahlfeld of Leipzig, first introduced the practice of weighing babies, and in 1880 Tarnier and Auvard commenced the use of incubators at the Paris Maternité in an attempt to reduce the death rate amongst immature infants. During the year 1882 Thomas Barlow in this country published his famous paper on infantile scurvy ; and, as early as 1844, Credé introduced the practice of distilling dilute solutions of silver nitrate into the conjunctival sacs of new-born babies for the purpose of preventing ophthalmia neonatorum.

The first practical steps to reduce infantile mortality, on a scale which bore some relation to actual needs, were taken in France early in the 'nineties of last century. Reasons for the concern felt in that country at the large wastage of infant life are not far to seek. At a time when the birth rate in this country showed no very serious signs of decline, that in France had begun to decrease in an alarming fashion. Each year the number of recruits for the forces was less than before and it was becoming evident, long before the close of the century, that the system of national defence, depending on a large conscript army, would be gravely prejudiced if the supply of young men of military age began to run short. Few governments during the course of history have been able to devise ways and means to persuade a reluctant population to increase the size of its families. In Rome in the first century attempts were made to penalise unmarried men (*coelibes*) and married persons with no family (*orbi*),¹ but these were a conspicuous failure ; and efforts in France in the nineteenth century to encourage larger families were equally unsuccessful.

Some prominent medical practitioners in France at this period began to deal with the problem on the basis of the saving of the lives of infants already born. It is believed that the first experiment on these lines was undertaken by Professor Hergott of Nancy where he established a "*Consultation de Nourissons*" in 1890. The most important name, however, in the early history of the child welfare movement is that of Pierre Budin. Budin was Professor of Obstetrics in the University of Paris, and it is to him that we owe the establishment, in 1892, of a pioneer system of "infant consultations" (as they were then called) which served as a model for the rest of the world. Professor Budin's book, founded on ten lectures, was translated into English by Dr. W. J. Maloney in 1907 under the title of *The Nursling*.

Well before the end of the century there was sufficient knowledge on the subject of the care of infants to enable the State, local authorities and voluntary societies in France and in other countries

¹ Notably under the *Lex Julia et Papia*, passed in the reign of Augustus.

to begin the task of founding centres where advice was available to mothers on the feeding and general care of their children. It was realised, for example, that mortality amongst breast-fed babies at that time was less than half of what it was in those artificially fed ; and it was known that one of the causes of diarrhoea, from which so many babies died, was the contamination of the milk used in feeding infants who were not brought up in the manner prescribed by nature. The main object of all the organisations which were established in England, Belgium, Italy, Switzerland, Spain and Germany in the 'nineties was to encourage breast feeding of infants or, if that was not possible in a proportion of cases, to provide efficient and safe substitutes. Thus Variot established in Paris milk stations, referred to as *gouttes de lait*, in 1892, from which poor mothers who could not feed their infants naturally, were able to obtain supplies of clean cows' milk at reasonable prices. This example was followed by Mr. Nathan Straus in New York, and some years later (1899) the first depôt of the kind in this country was opened at St. Helens through the efforts of Dr. Drew Harris, then Medical Officer of Health of that borough. In Liverpool Professor E. W. Hope opened a milk depot in 1901, and one was established at Battersea by Dr. G. F. McCleary in the following year. An important event in the history of this movement occurred in 1907 when Dr. Sykes, Medical Officer of Health of St. Pancras, opened a "school for nursing mothers." In the same year, Dr. C. O. Stallybrass, then a resident medical officer at the Liverpool Maternity Hospital, influenced by Budin's teaching, commenced a medical clinic for infants discharged from that hospital.

Early in the century the subject of pre-natal care of the mother was also receiving consideration. The first medical practitioner to call the attention of the profession throughout the world to the importance of care of the mother before her confinement was Dr. J. W. Ballantyne of Edinburgh, whose books on this subject were published in 1902 and 1904.

These three agencies, infant clinics, schools for nursing mothers and milk depôts, were the foundations upon which the future child welfare service was to be built, and by 1907 a number of towns, either through official or voluntary sources, had embarked upon this life-saving work. Grants were made by the Board of Education towards the costs of schools for mothers, and the Local Government Board obtained from Parliament in 1907 the adoptive Notification of Births Act, which was of great value to progressive local authorities, as it ensured that the Medical Officer of Health would obtain from doctor or midwife early information about the birth

of a child, and he was thus enabled to arrange for a visit to the house by a responsible officer of the Health Department. Some of these visitors were trained nurses and others were regarded as qualified for this work by the possession of experience as "social workers"; but they all began to be called by the title of Health Visitor. Birmingham appointed four Health Visitors in 1899,¹ and Liverpool engaged in 1897 the first of the many later employed. Manchester, it is said, may justly claim to have invented health visiting on a voluntary basis,² because the Ladies' Section of the Manchester and Salford Sanitary Association—with which the Manchester and Salford Ladies' Health Society had amalgamated in 1878—employed women of the working class to visit the poorer people and teach them the laws of health at as early a date as 1862. In 1890 the Manchester Corporation agreed to pay the salaries of six of the fourteen visitors; and in 1905 a trained educated woman was appointed by the City to supervise the whole staff.³ Later, trained nurses were appointed.

In general the beginnings of child welfare in urban areas in the early years of the twentieth century followed the same lines—the opening of milk centres, followed a little later by the establishment of clinics at which advice to mothers was given. As a general rule local authorities initiated these schemes, but not infrequently some voluntary society was first in the field. One of the local authorities which adopted a progressive, but somewhat independent line, was Huddersfield, a town with a population of 95,000. The Medical Officer of Health was Dr. S. G. Moore, an enthusiast in the cause of infant welfare, to which he had devoted much thought and attention. He was fortunate enough to have as the Chairman of the Health Committee Mr. Benjamin Broadbent, M.A., who became Mayor of the County Borough in 1905 and who had been inspired by Moore with an interest in child welfare. Broadbent, during his period of office as Mayor, introduced a scheme whereby all children born in the Longwood district of Huddersfield, on attaining their first birthday, should, during his year of office, receive a gift of £1. Out of 111 children born in the Longwood district in that year only four died. In the meantime the Health Committee was dealing with the details of the organisation of their new Child Welfare Service, and in February, 1905, a report was submitted to it which made the following proposals :—

(i) The appointment of Lady Health Visitors; (ii) small payments

¹ Vince, C. A., *History of the Corporation of Birmingham*, Vol. III.

² Simon, Shena D., *A Century of City Government*, p. 209.

³ *Ibid.*, p. 210.

to midwives and Registrars of Births for the notification of births; (iii) the establishment of a pure milk depôt, and (iv) the establishment of an experimental day nursery.¹ All these recommendations were accepted, and it was decided that the fee for notification—within 48 hours of the birth—should be one shilling, and that the number of Health Visitors to be appointed should be two, at a salary of £120 per annum. It was also decided to ask the Medical Officer of Health to draw up a card containing advice to mothers. The main piece of advice given in the card—referred to as the “golden rule”—was: “Feed with the Mother’s Milk; the Mother’s Milk is the natural food and the best.” Other items of advice were as follows: “Always feed the baby at regular intervals, every two hours at first, lengthening the interval to three hours”; “always keep the baby very clean”; “always let the baby sleep in a cradle or cot; a wicker basket makes a good cot (or even an empty packing case). But never let the baby sleep in the same bed with its mother.”² An interesting fact is that in Huddersfield at this time and for many years, health visiting was carried out by doctors.

The most important step taken by the Huddersfield Health Committee in 1905 was to persuade the Corporation to promote a private Bill in Parliament for the compulsory notification of births within the county borough. This became the Huddersfield Corporation Act, 1906, and it antedated the general legislation on this subject promoted by the Local Government Board in the following year.³

The stage has now been reached when the principles which should govern the new organisations for the care of the infant, then springing up all over the country, had been settled. The State and the local authorities had arrived at the point at which they were willing to provide an organisation for at least the elementary care of the mother and the young child. None of this was compulsory and each local authority was entitled to decide how much money it would spend on the new services. But by 1907 a satisfactory beginning had been made. The further development of the Maternity and Child Welfare Services will be described in some of the later chapters of this book.

Medical Inspection of School Children ; School Meals

In the latter half of the nineteenth century much interest was being taken on the Continent in the health of school children. One of the

¹ Huddersfield, Annual Report of the Medical Officer of Health, 1905, p. 15.

² *Ibid.*, p. 21.

³ The Notification of Births Act, 1907. This Act was adoptive, but notification was made compulsory throughout England and Wales by the Notification of Births (Extension) Act, 1915.

milestones in the early history of this subject was the investigation undertaken by Hermann Cohn in 1866 into the condition of the eyesight of 10,000 children in the schools in Breslau, and his deductions from the results of this painstaking piece of work led to changes taking place in the types of school desks and the lighting of the classrooms. One of the results of Cohn's enquiry was that it focused interest on the health of the child and led to further consideration of this subject in many countries. School doctors were first appointed in Wiesbaden in 1896 and this example was followed in many towns in Germany.

As in Germany so in England, an investigation into the eyesight of children attending schools provided the stimulus for increased interest into the general health of those who came under the educational care of the State. In 1880 Dr. Priestley Smith published the results of an inquiry into the vision of 2,000 children and adolescents in Birmingham; in 1882 Dr. Clement Dukes, the medical officer of Rugby School, issued a work entitled "Health at School"; and in 1892 Dr. Francis Warner reported upon his examinations of 50,000 children in schools of various types.¹ As has often happened in the domain of Public Health, especially during the earlier and experimental stages, local action has preceded action by the State and this occurred during the early history of the School Medical Service. The London School Board appointed Dr. W. R. Smith as a medical officer in 1890, and the Bradford School Board took similar action in 1893, securing the services of Dr. James Kerr (one of the earliest pioneers of the School Medical Service), who was later transferred to London. At this time the only measures taken by the State in regard to the health of school children were the issue of instructions concerning the exclusion of scholars during epidemics, and the passing of the Elementary Education (Blind and Deaf Children) Act, 1893. This Act made it the duty of every school authority to make provision for the education of blind and deaf children in special types of school. In 1898 a Board of Education Committee recommended that legislation should be obtained to make it the duty of every School Authority to decide "what children, not being imbecile, are, by reason of *mental or physical defect*, incapable of receiving proper benefit from the instruction in ordinary schools."² The Elementary Education (Defective and Epileptic Children) Act, 1899, gave power to Local Education Authorities to make similar provision for defective and epileptic children as the 1893 Act had done for the blind and deaf.

¹ Report of the Chief Medical Officer of the Board of Education, 1908-9, p. 4.

² *Ibid.*, p. 5.

The reports of the Royal Commission on Physical Training (Scotland) and of the Inter-Departmental Committee on Physical Deterioration, with their strong recommendations on the subject of the necessity for instituting a system of medical inspection in schools, have already been referred to (p. 243). These two bodies recommended, also, arrangements for the feeding of children in school, if practicable by voluntary societies, and under adequate safeguards to prevent abuse. During the early years of the century a number of voluntary bodies were providing meals for necessitous children in elementary schools and in some areas, notably in London, children's care committees had been formed partly for the purpose of arranging and supervising meals and partly to afford some assistance in regard to clothing. Meals so supplied consisted of bread and soup at midday and sometimes breakfasts of bread and margarine with hot cocoa.¹ The work of co-ordinating the activities of the various voluntary agencies engaged in supplying meals to necessitous children in London schools was undertaken by the London School Dinners Association, formed in 1889.

Further inquiries were set on foot by the Board of Education in 1905, through the appointment of a Committee, to ascertain what was being done in various parts of the country for the medical inspection of school children and for the supply of meals by voluntary agencies. This Committee provided for the Board the necessary information as required by their terms of reference, and made the following comment upon the arrangement, found in many areas, whereby the Medical Officer of Health was also appointed School Medical Officer : "There are distinct advantages in the School Medical Officer being also Medical Officer of Health. The duties of the two offices naturally overlap or may do so. The inspection of children for the prevention of the spread of infectious disease, and the sanitary inspection of the premises are examples of this. The union of the two offices tends to prevent duplication of work."²

The first result of this over-adequate amount of inquiry and discussion into the health of school children, extending over a long period of years, was the passing of the Education (Provision of Meals) Act, 1906, which authorised local education authorities to associate themselves with any committee which would undertake to supply food, and to assist such a committee with equipment and staff. Reluctantly, it would seem, the Act permitted the purchase of food by the local education authority when funds from private

¹ Gibbon, Sir Gwilym, and Bell, R. W., *History of the London County Council*, p. 302.

² Report of the Chief Medical Officer of the Board of Education, 1908-9, p. 9.

sources were either not available or were insufficient, but the sum so expended was not to exceed a halfpenny rate. The passing of the Act enabled progressive authorities such as those in London, Manchester and Liverpool to extend the schemes already in operation for the feeding of necessitous school children. Free meals for children had been provided in Manchester since 1886 but only during hard winters. The Act was immediately put into force, and free breakfasts and dinners supplied in 1908 cost £11,000. In Liverpool a system of providing meals for necessitous children, organised by teachers and voluntary workers, had been in force for a few years before the Provision of Meals Act was passed, arrangements being made for the issue of coupons which ensured the provision of a meal at the British Workman Cocoa Rooms. This scheme was co-ordinated by a committee known by the name of the Underfed Children's Meals Committee which continued to function when the Act of 1906 came into operation. In 1910, however, a special sub-committee of the Liverpool Education Committee was formed which took over full responsibility for the administration of the Act.¹

The passing of the Education (Administrative Provisions) Act in 1907 marked the legislative beginning of a new era in Public Health by initiating the first of the *Personal Health Services*. It had been found that sanitation was not enough, and that, in order to preserve and improve the health of individuals—of which the community is composed—it was necessary to provide medical, nursing and other services directly to those who required them. There are in the community certain classes of persons who, because of age or condition, require special care and attention, such as mothers, young children, children of school age, and those suffering from diseases which cannot be dealt with adequately in the general hospital in the ordinary way, either because such diseases are liable to be dangerous to others (*e.g.*, the infectious diseases and V.D.) or because their treatment is prolonged and requires social re-adjustments. The important example of the last type of disease is, of course, tuberculosis. By the date of the passing of the Education (Administrative Provisions) Act, the State had provided a number of hospitals for the accommodation of persons suffering from certain kinds of infectious diseases; in the Midwives Act, 1902, it had made arrangements for the training, enrolment and supervision of midwives; and, without any special legislation except the Notification of Births Act, it had given some encouragement to the efforts of local authorities and voluntary societies to care for the health of the young

¹ Hope, E. W., *Health at the Gateway*, p. 125.

child. In the case of the child attending school the State was now going much further and it had decided to create a full medical inspection service, which must inevitably develop in the direction of the provision of treatment for some of the defects found by the school medical officers. The creation of the new service involved the organisation of a Medical Department at the central offices of the Board of Education and to this Dr. Janet Campbell was appointed in 1908 and Dr. Ralph Crowley in 1909. Dr. (later Sir George) Newman was nominated Chief Medical Officer to the Board in 1907 and with him was associated Dr. Alfred Eichholz.

CHAPTER 2

SOME ASPECTS OF MEDICAL RESEARCH

Discoveries in regard to Tuberculosis

Koch's announcement at a meeting of the Physiological Society in Berlin in 1882 that he had discovered the causative organism of tuberculosis, created deep interest in the medical profession and, in view of the eminence of this scientist and the great value of his previous work, there was little disposition to question the truth of his claim. There was, indeed, some tendency in the profession to exaggerate the importance of this discovery and to suppose that, because in the case of some of the other communicable diseases the isolation of the causative organism had led to methods of prevention, the same would be true in the case of tuberculosis. It speedily became clear that this hope was unfounded, and that the ravages of tuberculosis both in human beings and in cattle could not be prevented or reduced by the mere knowledge of the identity and the morphological and cultural characteristics of the organism. Cholera and typhoid could be prevented by methods directed towards the cleanliness of the water supplies; but the transmission of the tubercle bacillus from the lungs of one person to the mouth of another by

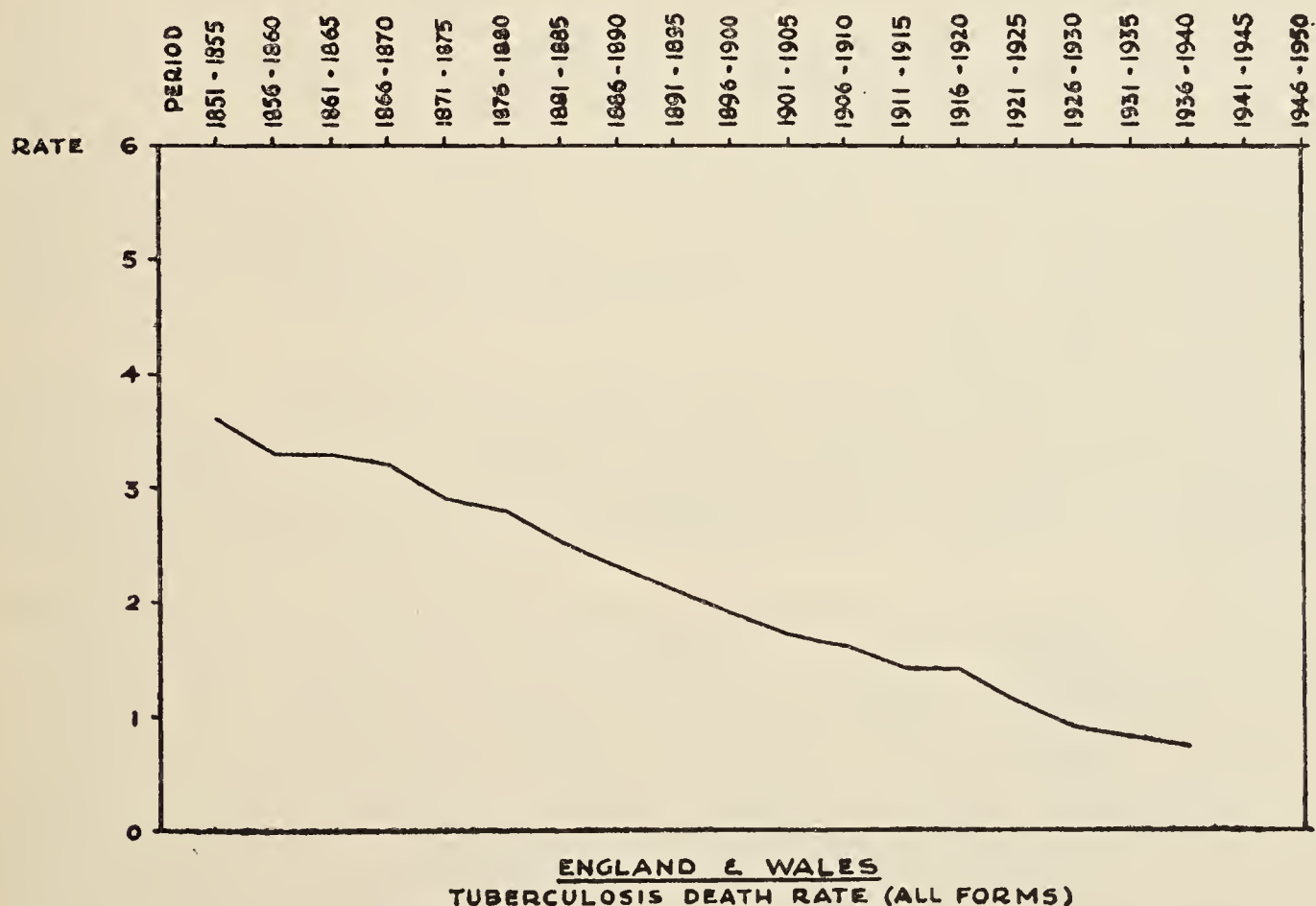


FIG. 4

the agency of droplet infection could not be seriously hindered by any practicable means at the disposal of the physicians. In spite of these considerations, the discovery of the tubercle bacillus was a great gain to the scientists and to humanity, and Koch has been regarded for more than half a century as one of the great benefactors of the human race.

Koch had still one more surprise for the scientific world. At the International Medical Congress held in London in 1901 he made the memorable pronouncement that human tuberculosis differed from bovine and could not be transmitted to cattle. As regards the transmission of bovine tuberculosis to man Koch was not inclined to be dogmatic but he expressed the opinion that "the extent of the infection by the milk and flesh of tubercular cattle and the butter made of this milk is hardly greater than that of hereditary transmission and I therefore do not deem it necessary to take any precautions against it." This was at once recognised as being a statement of great significance not only to medicine but also to the food trade, and it caused a good deal of consternation in the ranks of those British bacteriologists who had believed—as had Koch at one period—that the bacillus giving rise to the disease was the same organism whether the disease occurred in man or in any of the animals susceptible to infection by it. If the bovine bacillus could be proved, beyond a peradventure, to be harmless to man, then much of the supervision given to meat and milk, including the destruction of tuberculous meat as unfit for human food, with all the financial loss which that entailed, would be unnecessary. There were three possibilities—that the bacilli causing tuberculosis in both man and animals were identical, that they were different organisms but both pathogenic to man, or, lastly, as Koch now supposed, that they were different organisms each producing the disease in the one species but not in the other.

What appeared to be of the greatest importance was that this question should be decided as soon as possible and in August, 1901, a Royal Commission was appointed to inquire into the following subjects :—

- (1) Whether the disease in animals and man is one and the same;
- (2) Whether animals and man can be reciprocally infected with it;
- (3) Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favourable or unfavourable to such transmission.

The members of this famous Royal Commission on Tuberculosis were Sir Michael Foster, Professor of Physiology at Cambridge, German Sims Woodhead, Professor of Pathology at Cambridge, Sidney Harris Martin, Professor of Pathology at University College, London, John McFadyean, Principal and Professor of Comparative Pathology and Bacteriology at the Royal Veterinary College, and Rupert William Boyce, Professor of Pathology at University College, Liverpool. These were not the usual kinds of names to be found on the list of members of a Royal Commission, and it soon became evident that the procedure to be adopted by this one was to be entirely without precedent. Their problem was a purely scientific one not to be solved by the usual process of taking evidence, considering it and reporting upon it; it was necessary for the Royal Commission to adopt, instead, the time-honoured methods of inquiry into any natural phenomena—investigation and experiment. Accordingly, the Commission came to the conclusion “that it would be desirable not to begin the inquiry by taking evidence, that is to say by collecting the opinions of others (though this might be desirable at a later stage), but to attack the problem laid before us by conducting experimental investigations of our own.”¹ In commencing a series of investigations which would necessarily involve a large amount of animal experimentation the Commission were fortunate in having farm buildings and other accommodation placed at their disposal at Stansted by Sir James Blyth; and it was at this estate that the great researches, which were destined to enlarge so much our knowledge of tuberculosis, were carried out during the years 1901–1914. The first important results of the work performed for the Royal Commission by Louis Cobbett, A. Stanley Griffith, Eastwood, Frederick Griffith and others were contained in an interim report submitted on May 16th, 1904, which contained the conclusion that *tubercle of human origin can give rise in the bovine animal to tuberculosis identical with ordinary bovine tuberculosis*. The Commission therefore expressed the view that it would be unwise for legislative measures to be framed or modified in accordance with the theory that human and bovine tubercle bacilli are specifically different from each other.

The main results of the Commission's work were contained in voluminous interim reports presented in 1907. They were based upon the experimental injection of tuberculous material into the bodies of cows and calves and the feeding of these animals with this material; and the inquiry was extended to guinea-pigs, rabbits, pigs,

¹ Interim Report of the Royal Commission on Tuberculosis (Human and Bovine), 1904.

goats, dogs, cats, rats, monkeys and anthropoid apes. Material used for these methods contained the bovine organism in some series of experiments and the human bacillus in others. As a result of the most exhaustive experiments, lasting over a number of years, the investigators came to the definite conclusions:—

- (1) That cow's milk containing bovine tubercle bacilli is clearly a cause of tuberculosis and of fatal tuberculosis in man;
- (2) That a very large proportion of tuberculosis contracted by ingestion is due to tubercle bacilli of bovine source.

In view of these results the Commission emphasised the importance of measures being taken to prevent the sale or consumption of tuberculous milk. The 1907 report was the most important of those issued by this Royal Commission, but others were presented in 1910, 1913 and 1914.

Medical Research ; Some Famous Names

The research work done by the Royal Commission on Tuberculosis was of the greatest value to the progress of medicine, and the team spirit which made this organisation possible was an object lesson to scientists all over the world. It had long been realised that fundamental medical research could only be accomplished by the co-operative efforts of a number of workers, each a specialist in his own field, who, in accordance with a carefully designed plan, made his individual contribution to the final result. The particular organisation adopted by the Royal Commission was a unique solution of a highly specialised problem, but this was not the normal course of medical research in this country. In ordinary circumstances investigations of the kinds undertaken by the bacteriologists who were at the service of the Local Government Board were carried out in the laboratories of universities or hospitals or, somewhat exceptionally, in a private laboratory belonging to the research worker. Some of the most important researches into the fundamental problems of medicine, undertaken at this time, were carried out at universities with all the resources of skilled assistance and expertly designed equipment which such centres of learning can provide. The condition precedent of medical research is an idea, and it was fortunate that men with fruitful ideas were not wanting in the medical profession fifty years ago.

Sir Almroth Edward Wright (1861–1947). Wright received his undergraduate medical education at Dublin University and afterwards studied at Leipzig, Strasbourg and Marburg. From 1892 to 1902 he was a professor at the Army Medical School, Netley, and in the latter year was appointed Professor of Experimental Pathology

at the University of London. His work on anti-typhoid inoculation and the measurement of the bactericidal power of the human blood was published in various papers between 1897 and 1901; and it seems likely that his name will be more lastingly remembered for the discovery of the anti-typhoid vaccine than for his more fundamental researches into immunity. The vaccine was introduced in time to be tested very thoroughly in the South African War, and in an improved form it was used extensively in all armies in 1914–18. Figures compiled after the use of Wright's vaccine under active service conditions proved conclusively that both morbidity rates and fatality rates were much lower in the inoculated troops than in the uninoculated. Those who expected that the immunity conferred by Wright's anti-typhoid vaccine would be absolute, and enable sanitary precautions to be neglected, were of course disappointed; the advantage of the vaccine was that when, under exceptionally difficult service conditions, it was impossible to take normal care of the health of the troops the results of accidents or mistakes in regard to the water supplies would not be too serious.

Between 1903 and 1906 Wright published the results of his researches into the part played by the blood serum in phagocytosis, and he introduced the idea of opsonins and the opsonic index as part of our concepts of the mechanisms of immunity. Later he worked on the vaccine treatment of various diseases and, while in South Africa, suggested the prophylactic inoculation of Rand miners against pneumonia. During the 1914–18 war he undertook a number of investigations into the bacteriology of wounds and gas gangrene.

Sir Frederick Gowland Hopkins (1861–1947) is regarded as one of the greatest of the pioneers in bio-chemistry. He studied medicine at Guy's Hospital and qualified, rather late, in 1894. But his main interest was in chemistry and especially in the chemistry of nutrition, and he continued his researches into this subject when he was appointed a lecturer in chemical physiology at Cambridge with a fellowship at Emmanuel College. Hopkin's principal claim to fame is, of course, his discovery of *accessory food factors* or vitamins. The existence of these chemical bodies was first suggested by Lunin of Basle, who, in 1881, after feeding mice upon an artificial mixture of the individual constituents of milk, was led to conclude by their failure to survive that "a natural food such as milk must therefore contain besides these known principal ingredients small quantities of unknown substances essential to life." In 1897 Eijkman, later appointed Professor of Hygiene at Utrecht, arrived at the conclusion that beri-beri was due to the

regular consumption, as a principal article of diet, of polished rice; and experiments on fowls with polished rice gave rise to similar symptoms as in the case of beri-beri in man. If, however, the fowls were fed on whole rice grains this disease failed to develop.¹

Eijkman and subsequent workers up to the time of Gowland Hopkins failed to obtain a clear conception of the nature of deficiency diseases, even of those which were well known like beri-beri and scurvy. Hopkins had expressed the opinion in 1906, that the animal body was adjusted to live either upon plant tissue or other animals, "and these contain countless substances other than the proteins, carbohydrates and fats."² The results of some years' work in experimenting on the diet of rats were published by Hopkins in 1912. The artificial diet used was a mixture containing caseinogen, starch, cane sugar, lard and organic salts. If these food constituents were carefully purified the rats ceased to grow and finally died, in spite of the fact that the amount of food intake was sufficient.

Another series of animals were given a precisely similar diet with the addition of a small amount of milk amounting to about 4 per cent. of the food intake; and this was sufficient to cause normal growth. Other additions to the purified artificial diet such as yeast or extracts of milk solids, freed from proteins and salts, were also followed by normal growth. Discussing these results, Hopkins said that "the amount which seems sufficient to secure growth is so small that a catalytic or stimulative function seems more likely."

Sir Charles Sherrington, O.M., G.B.E., M.D., F.R.S. (1857-). The active working life of Sir Charles Sherrington, fortunately for medical science, covered such a long period that it is difficult, in a chronological history of this kind, to decide where to place him. His most famous work, *The Integrative Action of the Nervous System*, which Fulton³ ranks in importance with Harvey's *De Motu Cordis*, was published in 1906, but the substance of it had been delivered as the Silliman Lectures at Yale University in 1904.

In his earlier years Sherrington assisted Virchow, Koch, Goltz and Pfluger, but his clinical work was carried on at St. Thomas's Hospital, London, where he was Lecturer in Physiology. In 1891, at the Brown Institution, a veterinary hospital associated with the University of London, he commenced his famous

¹ *Vitamins, A Survey of Present Knowledge*, Medical Research Council, 1932, pp. 11-12.

² *Ibid.*, p. 15.

³ Dr. John F. Fulton, Professor of Physiology, Yale University.

researches on motor and sensory segmentation. A paper published in 1894, entitled *On the Anatomical Constitution of Skeletal Muscles*, initiated the modern study of the "proprioceptive" system. By 1895 Sherrington's status as a research physiologist was fully established, and in that year he was appointed Professor of Physiology at the University of Liverpool. It was while he occupied the Chair of Physiology at Liverpool that he carried on the researches which led to the publication of *The Integrative Action of the Nervous System*. Sherrington moved to the Chair of Physiology at Oxford in 1913, where he continued his work on the localisation of function in the brain and on the reflexes. Some of his researches from 1898 onwards added to the Hughlings Jackson conception of decerebrate rigidity and the rigidity found in connection with hemiplegia. While at Oxford he commenced his work of analysis on the various reflexes in animals and in man, especially the "stretch reflex."

To the physician, Sherrington's work conveyed a clear picture of the physiological bases of the clinical signs which had been for so many years minutely studied.

In his later years his attention turned to the relationship between mind and the physiological activity of the nervous system. "In all those types of organism," he wrote, "in which the physical and the psychical co-exist, each of the two achieves its aim only by reason of a *contact utile* between them. And this liaison can rank as the final and supreme integration completing its individual. But the problem of *how* that liaison is effected remains unsolved; it remains where Aristotle left it more than 2,000 years ago."

It is not surprising that the modern astronomer, who has penetrated so far into the mysteries of unfathomable space and has learnt to understand something of the harmonies of the spheres, should be tempted to investigate the working of the human mind which is capable of embracing, in the almost infinite sweep of its operation, the vast extent of the universe. It is, perhaps, even more comprehensible that the physiologist, investigating the mechanisms whereby the mind maintains contact with the outer world, should ponder over the relationships existing between the mind and the nervous system and other structures of the human body.¹ In *Man on His Nature* (1940), Sherrington reveals the results of his thinking on these fundamental subjects which have engaged the attention

¹ Unlike Aristotle who thought that the seat of consciousness was the heart. Sir Charles Sherrington attained the great age of 90 years in November, 1947, and received from the medical professions of this and many other countries the homage to which a lifetime of brilliant research justly entitled him.

of philosophers throughout the ages. He continues to consider these problems in the *Endeavour of Jean Fernel* (1946)—the portrait of a French sixteenth-century physiologist who associated the brain with consciousness.

The name of *August von Wassermann* (1866–1925) is important not only to medicine, but also to Public Health, because of his introduction of the famous diagnostic test for syphilis—the Wassermann Reaction—in 1907. No discovery in science is made in isolation, and von Wassermann's valuable contribution to the serological diagnosis of syphilis depended upon the observations of Metchnikoff and Roux in 1903, that apes could be artificially infected with this disease, and upon the researches of Schaudinn and Hoffman which isolated the causative organism in 1905. When a national service for the diagnosis and treatment of venereal disease was established in this country in 1916 (p. 336), the very great value of the Wassermann Reaction, as affording an accurate criterion of the presence or absence of syphilis, was fully realised.

Although the work of *Hugh Owen Thomas* (1834–1891), of Liverpool, was performed during the nineteenth century it was not fully recognised until the twentieth, when his nephew, Sir Robert Jones, introduced his methods of dealing with fractures before and during the 1914–18 war. The Thomas hip splint, in particular, was used extensively during that war. Hugh Owen Thomas and Sir Robert Jones are regarded as the pioneers of modern orthopaedic surgery.

Sir W. Arbuthnot Lane (1856–1943) was one of the outstanding exponents of abdominal surgery, but his original mind contributed to several other departments of medicine. Of all his speculations, that in regard to intestinal stasis aroused most controversy in the medical profession and provoked most disagreement. His theory was that civilised man, partly because of his erect posture and partly owing to an unnatural diet, had developed “kinks” in the intestines in certain situations and these were the anatomical cause of stasis. On these grounds Lane devised an operation for short-circuiting part of the large intestine in cases of intestinal stasis. He introduced plating for fractures, was one of the earlier surgeons to remove a portion of a rib in children to secure drainage in empyema, and operated upon children for cleft palate at a very early age. He founded the New Health Society in 1925.

The main claim to fame of *Clemens von Pirquet* (1874–1929) is the cutaneous tuberculin reaction which bears his name, and this he announced in 1907. He was born near Vienna and took his medical qualification at the University of Graz. For a short period von Pirquet was professor of Paediatrics at Johns Hopkins University, Baltimore, and afterwards held a similar professorship in diseases of children at Breslau University. The von Pirquet reaction has proved of value in connection with the diagnosis of tubercular infection in children.

Tropical Medicine

The history of the researches into the problems presented by the special diseases found in the tropics discloses some of the major triumphs of preventive medicine. As the greatest of colonial powers, Great Britain has had many opportunities of conducting research into tropical diseases, and some of the most important of the discoveries in this vast branch of medicine have been made by scientists attached to the Indian Medical Service, the Colonial Medical Service and the Army. Vast tracts of territory in Africa, India and other tropical parts of the globe can only be inhabited by the white man if he is protected from the parasitic diseases peculiar to hot and humid climates. Some districts in the tropics are scarcely habitable even by native races because of the prevalence of malaria, trypanosomiasis, or other similar diseases. Many of these places, habitable only with difficulty and at great risk, possess natural resources which may prove of great value to mankind. In a book of this kind, concerned with English Public Health, it is only necessary to make mention of the achievements of research workers in the solution of problems not usually found in this country, first, because they illustrate the methods adopted in scientific medicine and, secondly, because tropical diseases sometimes, but fortunately very seldom, gain entrance into these islands through the ports.

The tropical diseases, out of very many to which brief reference may be made, are yellow fever, plague and malaria. The first two are often referred to as “Convention” diseases, because they are amongst the diseases in regard to which special precautions were agreed to at the International Sanitary Conventions of Paris in 1911–12 and 1926. Malaria, although found very extensively in the tropics, is also indigenous on the Continent, especially in Italy, and it occurs in the United States and was at one time not infrequent in this country. There are still traces of it lingering in a few places such as the Fen country and the Romney Marshes. But it is in the tropics where malaria reaches the zenith of its destructiveness,

and there it is accountable for some millions of deaths each year and an untold amount of sickness and physical weakness. We will return to this disease towards the latter part of this section.

Yellow fever causes little alarm in this country as it has seldom invaded our shores and then in no great force. Its principal habitats are the West Indies, Central and South America and West Africa, but it has quite recently been shown to exist in the East of that continent, having appeared in the Sudan. The disease was known in West Africa at least as early as the middle of the fifteenth century, and the records give some indication of an outbreak at San Domingo in 1493. Large numbers of epidemics of yellow fever have occurred since that time. It was not until the present century that full details of the organism causing this disease and its mode of transmission were worked out. Creighton, discussing the first outbreak of yellow fever at Bridgetown, Barbados, in 1647, thought it was due to a bacterium, spread by the contamination of the soil by the excretions of negroes from the slave ships.¹ Carlos Finlay was probably the first to perform experiments to show that yellow fever might be conveyed from an infected person to another by the bite of a mosquito, and he thought that the one concerned in the transmission of the disease was the *Culex fasciatus*. An American Commission, headed by Major Walter Reed, investigated the problem of the transmission of yellow fever in Cuba, commencing in 1901. Dr. Carroll, who was a member of the Commission, was infected by an experimental mosquito and showed the typical signs and symptoms of yellow fever, but fortunately recovered. Another member, Jesse Lazear, was less fortunate and died as a result of infection from an *Aedes* mosquito. Many experiments of a similar kind were undertaken, often at great risk, by members or employees of the Commission and the important conclusion was arrived at that a mosquito, now termed *Aedes aegypti*, served as the intermediate host for the parasite of yellow fever. The distribution of this mosquito is very wide and it is found in many places, including East Africa, where, except recently in the Sudan, there is no yellow fever.

Many years were to elapse before there was agreement as to the causative organism of yellow fever. One of the greatest of modern bacteriologists—Noguchi—who died in 1928 in West Africa from the disease he was investigating, thought it was caused by a *Leptospira*. In the same year, however, Torres brought forward evidence which is now fully accepted, that the causal organism is

¹ Creighton, Charles, M.D., *History of Epidemics in Britain*, 1891, pp. 630 *et seq.*

a virus which, fortunately from the research point of view, can be made to infect monkeys of the type *Macacus rhesus*. As a result, methods of protection by the inoculation of a culture of the organism have been devised. The culture is grown on chicken embryos and, by suitable methods, a vaccine is prepared.

The discovery by the American Mission to Cuba in 1901 of the vector conveying yellow fever was a fortunate circumstance in view of the medical difficulties encountered by the engineers engaged in constructing the Panama Canal. This area was one of the worst pest-holes in the world and it was due to the knowledge and determination of the Medical Officer, William Crawford Gorgas (1854–1920), that the mosquitoes in the parts adjacent to the projected line of the Canal were destroyed and the workers freed from the menace of yellow fever. Drainage of swamp regions near to the Canal reduced the incidence of malaria. Measures of this kind, by the time the Canal was completed in 1914, had reduced the death rate of Panama to a figure below that of any American city. The opening of the Canal was a triumph to Colonel Gorgas and to scientific medicine.¹

There is perhaps less to be said in this section about plague—another of the centuries-old scourges of mankind. It is primarily a disease of rodents of which the rat is the commonest and it is normally—but not invariably—spread from rat to man through the intervention of the rat flea. The organism, now called *Pasteurella pestis*, was discovered by Yersin in 1894. Many rodents besides rats and mice can convey the disease. The more important of the facts about the transmission of plague were established by the Indian Plague Commission. As a prophylactic, Haffkine's vaccine has been used in areas subject to plague epidemics with some success.

Plague was last seen in epidemic form in this country in 1665–6,² and its disappearance from the scene is connected with the rapid replacement during the later part of that century of the black rat by the brown rat, not only in the British Isles but also on the Continent of Europe. The black rat is much more domesticated than the larger brown rat and its flea is prone to attack man. The brown rat, largely an inhabitant of the sewers, comes into less close contact with human habitations and, in any case, the flea which it harbours is less inclined to bite mankind. Only in the dockside areas in this country are there large numbers of black rats, and they are a constant source of danger when ships carrying infected

¹ Gorgas had had an attack of yellow fever in early life and was immune.

² There was a small outbreak of plague in Liverpool in 1901 (pp. 288–9), and imported cases were found at some of the ports in 1916 (p. 364).

rats of the same species come to our shores. Careful precautions are taken at the ports to destroy rats on ships by fumigation.

The most important names associated with the discoveries of the causative organism of malaria and the mode of its transmission to man are those of Laveran, Manson and Ross. Laveran's discovery, of great importance to tropical medicine, was made on November 6th, 1880, when he "happened to be examining the blood of a malaria patient and was observing certain pigmented hyaline bodies when he saw several long flagella suddenly extrude from them and lash about in the blood. He regarded these bodies as *Oscillaria* and called them *Oscillaria malariae*."¹ Although Laveran's recognition of the malarial parasite was disputed by some of the Italian malariologists, who had great experience of this disease both in their own country and abroad, Marchiafava, using an oil-immersion lens, confirmed the former's observations in 1884. A number of detailed discoveries as to the nature of the parasite were made by Italian observers soon after, including the differentiation of the organism of tertian from that of quartan fever. The next question to be settled in connection with the complicated problem of the transmission of the disease was that of the vector conveying the organism to man. In the case of one tropical disease (filariasis), Patrick Manson (1844–1922) had already shown that it could be conveyed by a mosquito, and there was therefore the possibility that malaria might be transmitted in a somewhat similar way. There were, however, many species of mosquitoes and other insects to be considered, and for some years progress in the direction of discovering the vector which carried the infection to human beings was very slow. Manson's discovery that the mosquito acted as an intermediate host in the case of one disease lent direction to the subsequent work of Ronald Ross (1857–1932). Ross, who spent most of his working life in India, was aided and advised by Sir Patrick Manson who had become, in 1897, Medical Adviser to the Secretary of State for the Colonies.² Through many disappointments Ross, as a member of the Indian Medical Service, pursued his work on malaria, and on August 20th, 1897, he observed for the first time the growth of the malaria parasite in the wall of the stomach of a mosquito which had bitten an infected patient. This discovery, which made Ross famous, completed the proof that the transmission of malaria from patient to patient was through the agency of members of a particular species of mosquito, in which the parasite undergoes part of its life cycle.

¹ Scott, Sir H. Harold, *A History of Tropical Medicine*, Vol. I, pp. 151–2.

² Manson-Bahr, P. H., and Alcock, A., *The Life and Work of Sir Patrick Manson*, p. 115.

In 1902 Ross was appointed Professor of Tropical Medicine at University College, Liverpool, and in 1912 he relinquished this post and became Physician for Tropical Diseases at King's College Hospital. From 1913 onwards, however, Ross travelled to Liverpool from time to time to give courses of lectures, as the part-time occupant of the Chair of Tropical Sanitation.

The progress in our knowledge of tropical medicine, of which no more than a mention has been made in this section, led to a demand for systematised facilities for the teaching of a subject which is of such importance to a nation possessing a colonial empire, and schools were established in London and Liverpool. The successful establishment of the London School of Tropical Medicine owed much to the influence of Sir Patrick Manson. Through the co-operation of the Seamen's Hospital Society and with the help of Mr. Joseph Chamberlain who was then Secretary of State for the Colonies, Manson organised the London School of Tropical Medicine in connection with the Albert Dock Hospital, where the first session commenced on October 3rd, 1899. In 1920 the School was transferred to Ensleigh Gardens, and the most important stage in its development was completed with the opening of the London School of Hygiene and Tropical Medicine on July 18th, 1929. The cost of the new building was defrayed through the generosity of the Rockefeller Trustees, and the first Director of the joint School was Sir Andrew Balfour.¹

The Liverpool School of Tropical Medicine was established in April, 1898, rather more than a year before the one in London, and to it belongs the honour of being the first School of Tropical Medicine in the world. Its origins were due to the wisdom and public spirit of the Liverpool shipowner, the late Sir Alfred Jones, K.C.M.G., who, inspired by Mr. Chamberlain's appeal for facilities for the study of tropical diseases, gave a donation of £350 per annum for three years to the President of the Royal Southern Hospital for this purpose. Laboratory accommodation was provided at the University and Professor Rupert Boyce was appointed the first Dean of the new School. Courses of instruction were commenced in May, 1898. The Diploma in Tropical Medicine was established in 1904, and the Diploma in Tropical Hygiene in 1920. The present buildings of the School, also due to the beneficence of Sir Alfred

¹ Balfour died in 1931 and he was succeeded in the office of Director by Sir Wilson Jameson. Jameson was appointed Chief Medical Officer of the Ministry of Health and Board of Education in 1940 and he retired in 1950. He has been succeeded by Sir John Charles. Prof. J. M. Mackintosh was Dean of the London School of Hygiene and Tropical Medicine from 1945 to 1950 and he was followed in that office by Dr. Andrew Topping.

Jones, were opened on July 24th, 1920, and an extension was completed in 1940.

Any account of the progress of Tropical Medicine would be incomplete without a reference to the Indian Medical Service which, with the passing of power from the hands of the British Government, ceased to exist at midnight on Thursday, August 14th, 1947. The record of this great Service extends over the long period of 335 years, at first under the East India Company and later under the British Crown. Prior to 1896 the organisation of the Service was on the basis of the three Presidencies, but in that year an amalgamation of the three separate services took place and the Indian Medical Service, in the form in which it was known for over 50 years, came into being. The Indian Medical Service during its long history fulfilled many functions both in peace and in war; but it will be especially remembered in the annals of medicine for the researches of so many of its members into the problems of tropical diseases and tropical hygiene. It will be sufficient here to mention a few of the great names associated with this Service :— Ross (malaria), Donovan¹ (kala-azar), Leonard Rogers (leprosy), McCarrison (goitre and diseases of nutrition), and Christophers, James and Sinton (malaria). “Of all the great administrative Services of India, the I.M.S. was perhaps the most fully prepared for the coming-of-age of its ward ; and it can now with a clear conscience take its leave and justly claim to share with Wren the proud epitaph *Si monumentum requiris, circumspice.*”²

¹ Donovan's colleague in his researches into the ætiology of kala-azar was Dr. (afterwards Sir William) Leishman, who was a member of the R.A.M.C.

² *Brit. Med. J.*, August 23rd, 1947, p. 301.

CHAPTER 3

PUBLIC HEALTH AND SOCIAL CONDITIONS DURING THE EARLY YEARS OF THE TWENTIETH CENTURY

In carrying the history of Public Health over the boundary line separating the nineteenth from the twentieth century it may be desirable to pause to consider the growth of population during the second half of the nineteenth century, and the changes in its distribution between town and country and between one industry and another. Population is the raw material of Public Health and its ebb and flow, caused by changes in birth rates and death rates, by emigration and immigration, and by movements within the country at the behest of industry, are matters of concern to the epidemiologist and sanitarian, who anxiously watch the effects these events may have upon the health of the community. During the centuries preceding the Industrial Revolution, increases in population were small and, at a time when little food was being imported, the number of people which the land of this country could support depended upon the standards of agriculture current at various periods, and these advanced comparatively slowly.

In 1851 the population of England and Wales was 17,927,000; in 1881 it was 25,974,000; and in 1901 32,527,000. The period of maximum increase occurred in the decade 1871–80, at a time when unemployment and pauperism were falling and wages rising. This increase in population, due to a high birth rate and a falling death rate was only slightly checked by the substantial excess of emigration over immigration in this period. The rate of *natural increase* of population, *i.e.*, the annual difference between the death rates and birth rates, fluctuated between 11.0 and 14.0 during the half century from 1851 to 1900, and it was this factor which led to the unexampled increase in population, which crowded, and then overcrowded, these small islands. The birth rate, which was 33.9 per thousand in the quinquennial period 1851–55, reached its maximum in 1871–75, being then 35.5, and it declined rather slowly until it was 29.3 in 1896–1900. Death rates fell from 22.7 in the period 1851–5 to 17.7 in 1896–1900. According to the views of the Registrar-General as expressed in the 1908 Annual Report, the decline in the birth rate was, in part, due to a decrease in the proportion of married women of conceptive ages, but largely to deliberate restriction of child-bearing.

It was mentioned in an earlier chapter that in the year 1851

50 per cent. of the population of this country lived in towns, but the process of urbanisation had steadily continued until in 1901 the proportion had reached 77 per cent. The advances in Public Health had prevented such an important index as the infantile mortality rate from increasing during this period of progressive urbanisation, and as far as this figure is concerned England and Wales were in a favourable position at the end of the century as compared with many of the less industrialised European countries. Thus, during the period 1896–1905, the infantile mortality rate in England and Wales was 147, while it was 268 in Russia, 223 in Austria, 196 in Prussia, 168 in Italy and 149 in France. (69th Annual Report of the Registrar-General.) Of all the causes of infantile deaths in this country, diarrhœal diseases came easily first.

As regards the mortality from particular diseases, typhus fever had practically died out by the end of the century as a result of a reduction in dense overcrowding, the clearance of insanitary areas, the hospitalisation of patients and, last but not least, improved personal cleanliness; and, as we have remarked previously, the great reduction in the incidence of typhoid fever was directly attributable to improvements in sanitation, including the provision of pure water supplies. In a report issued in 1909¹ the Local Government Board attributed to the treatment of a large number of the poorest of the consumptive patients in work-house infirmaries, an important share in the reduction of tuberculosis.²

Figures for the years 1900–1–2 may be taken for the purpose of drawing conclusions, on statistical grounds, as to the healthiness of various occupations at that time. Taking the figure for all occupied males as 1,000, the relative figures deduced from the mortality returns are as follows :—seaman, 1,646; dock labourer, 1,481; innkeeper, 1,781; hotel servant, 1,883; general shopkeeper, 1,508; potter, 1,493; copper miner, 1,668; tin miner, 2,131; costermonger and hawker, 2,007; general labourer, 2,235; clergyman, 524; physician, surgeon, 952; farmer, 596; cotton, 1,114.

During the period from 1851 to 1901 the number of persons engaged in various occupations had changed with alterations which had taken place in industry; but the number employed had increased proportionally to the larger total of population. Of all

¹ Statistics relating to Public Health and Social Conditions, 1909, a most valuable publication.

² Modern opinion would be inclined to attach less weight to this factor and more to the rise in the standard of living which was taking place at this time.

the industries which had suffered material changes that of agriculture had sustained the largest reductions in the numbers employed. In the year 1851 the number of males employed in agriculture was 1,544,087, being 23.5 per cent. of all occupied males; whereas in 1901 this figure had fallen to 1,153,185, constituting 9.5 per cent. of the total. This is a decline of 30 per cent. in the number of males employed on the land, but the reduction in the number of labourers was much greater, amounting to about 60 per cent. The area of arable land had decreased, while land under pasture had increased. There was, however, much more labour-saving machinery used in 1901 than in 1851, and there is some evidence that there was a certain amount of agricultural labour which was surplus to requirements during most of this period.¹

According to Board of Trade returns there had been a substantial rise in agricultural wages which had increased from 9s. 3½*d.* per week in 1850, to 14s. 6*d.* in 1907. In contrast to agriculture, where there had been a reduction in total numbers at a time of rapidly expanding population, the building trade was, relatively, rather more than holding its own. At the 1851 Census 463,491 males were returned as being engaged in building, and in 1901 952,093. In the coal mining industry the number employed had increased between 1851 and 1901 from 219,000 to 643,000; in wool from 284,000 to 400,000; and those occupied on the largely expanded railway system from 65,000 to 314,000.

As we have seen, agricultural wages had risen by about 60 per cent. Throughout industry as a whole wages had risen by about 40 per cent. in the interval between the period 1860–7 and 1900–7, and, according to the estimates which have been made from the available information, the general levels of prices, over a rather longer period, had fallen by 24 per cent. The combination of the two factors of increased money wages and an appreciable reduction in the prices of commodities purchased by the workers brought about a pronounced rise in the standard of life of the poorer, and much the most numerous, classes of the community; and to this important fact is traceable some part of the improvement in the health returns at this period.

The Public Health Service at the beginning of the twentieth century was still operating under the Public Health Act, 1875, but this had been amended in a number of minor ways in 1890.² It was further amended in 1907³ by an Act which added to the powers of

¹ Statistics relating to Public Health and Social Conditions, 1909, p. 36.

² Public Health Acts (Amendment) Act, 1890.

³ Public Health Acts (Amendment) Act, 1907.

local authorities to make by-laws, extended the list of nuisances contained in Sec. 91 of the Public Health Act, 1875, and provided greater facilities for the conversion of privies to the water-carriage system. The Housing of the Working Classes Act of 1890 was still the principal Act, but it had been amended in some details in 1900 and 1903.¹ In spite of much housing legislation, the standard of accommodation which the poorer wage-earner could afford was grievously below his requirements and certainly of his deserts. Many societies and individuals attempted in limited ways to provide new housing accommodation for the worker or to improve that which he already had; and a very few local authorities, notably the London County Council and the City of Liverpool, besides undertaking a limited number of slum-clearance schemes, embarked on policies of building additional houses apart from those required for clearance purposes. In London the first site for additional housing, apart from rehousing, was purchased in Tooting in 1900, and later sites were acquired at Tottenham, Norbury and Hammersmith.²

The most conspicuous example of voluntary work in the cause of housing reform was that of Miss Octavia Hill (1842–1912). Miss Hill's mother was the daughter of Southwood Smith (p. 16) and it may perchance have happened that this famous lady inherited some of her grandfather's zeal for sanitary reform. Later in life she came to be regarded as an authority on the lives of the poor, and she gave valuable evidence to the Royal Commission on the Housing of the Working Classes in May, 1884. She was a member of the Royal Commission on the Poor Laws of 1905. Her principal work was concerned with house property management, and she succeeded, by sympathy and tact, in gaining the confidence of the people in the working-class dwellings which she visited. Miss Hill taught many working mothers how to make homes of the poorest of houses, but true to her Victorian conceptions, she was convinced that houses, like food and clothing, should be paid for in full by the users and consumers and should not be subsidised. The final result of Octavia Hill's life work was not achieved until recent years when the Association of Women House Property Managers was formed.

On the subject of housing the most important achievement of the legislature was the passing of the Housing and Town Planning Act, 1909. The Act was introduced by Mr. John Burns, who was

¹ Housing of the Working Classes Acts, 1900 and 1903.

² Gibbon, Sir Gwilym, and Bell, R. W., *History of the London County Council*, p. 373.

then President of the Local Government Board. The first part of this Act amends in some particulars the Housing of the Working Classes Act, 1890, extends its scope by requiring that it should take effect in all districts—urban and rural—without adoption, and prohibits for the first time the erection of back-to-back houses. In the second part of the Act something new appears in housing legislation in the provisions in regard to town planning. Up to this time there had been no restrictions, as far as the local authorities were concerned, in the use to which an owner might put his land, and towns were rapidly expanding at the will and pleasure of those who chose to develop their land, without regard to the needs or convenience of the community. This Act gave power to local authorities to prepare town planning schemes in connection with any land in the course of development or which appeared likely to be used for building purposes. The object of such schemes was to secure proper sanitary conditions, amenity and convenience in the area.

The Housing and Town Planning Act, 1909, which was permissive as regards its planning provisions, was not administered by the local authorities with any particular enthusiasm, and few schemes were submitted to the Local Government Board up to the outbreak of war in 1914. But a start had been made and some of the defects of the original Act, such as its permissive character and the fact that it only applied to land which was undeveloped, were remedied in subsequent legislation.¹

Further Progress in Factory Legislation

By the beginning of the twentieth century a code of factory law, consisting of numerous Acts and Regulations, made provision for the health and safety of the workers in factories and workshops and, to a less extent, in the home industries. The foundations had been well and truly laid during the previous 70 years; but just as industry was continually changing in scope and method, so factory legislation had to be amended and enlarged from time to time to meet the dynamic conditions which it confronted. In 1901 the important Factory and Workshops Act was passed. As had become customary in comprehensive Acts of Parliament of this kind, it was divided into parts, each dealing with a broad subject. In the case of the Factory and Workshops Act, 1901, the ten parts into which it is

¹ The Housing and Town Planning Act, 1909, made it compulsory for every county council (except the L.C.C.) to appoint a full-time Medical Officer of Health who was not to be removable from his office without the consent of the Local Government Board.

divided deal with (i) health and safety, (ii) employment, (iii) education of children, (iv) dangerous and unhealthy industries, (v) special modifications and extensions, (vi) homework, (vii) particulars of work and wages, (viii) administration, (ix) legal proceedings, and (x) application and definitions. In general, the sanitary condition of factories, workshops and workplaces is supervised by the inspectors of the local authority, and other matters, including the safety of machinery and safeguards in the case of industries scheduled as unhealthy and dangerous, are administered by the factory inspectors. The usual prohibition of the employment of women within four weeks after childbirth was included in the Act. Under the heading of dangerous and unhealthy industries there was included in this Act the requirement that certain diseases such as lead, phosphorus, arsenical or mercurial poisoning or anthrax should be notified by the medical practitioner attending, to the Chief Inspector of Factories at the Home Office ; and it was laid down that the factory inspector might require the use of fans in connection with processes producing dust or vapours which would injure the operatives. The employment of children and young persons was prohibited in the making of white lead and the silvering of mirrors by the mercurial process. In dry grinding in the metal trade, and in the dipping of lucifer matches, no child was allowed to be employed.

The Factory and Workshop Act, 1907, constituted laundries as workshops, or as factories if mechanical power was used. It also limited the hours of employment of women to 68 per week between the hours of 7 a.m. and 9 p.m. An important measure in regard to the health of certain workers was the White Phosphorus Matches Prohibition Act, 1908. This came into operation in 1910, and the cessation of the use of white phosphorus and the substitution for it of the red or amorphous variety, which is non-poisonous, did away of course with any danger to the operatives from this process.¹

Workmen's Compensation

Up to the year 1880 the legal remedy of a workman who was injured during the course of his occupation was an action at Common Law against his employer. In 1880 the Employers' Liability Act imposed upon the master a statutory liability for his own acts of negligence or those of his servants; while the Workmen's Com-

¹ Dr. Letheby, Medical Officer of Health of the City of London, was one of the first to call attention to the dangers of this process. See *Factory Inspection in Great Britain*, by T. K. Djang, pp. 194-5.

pensation Act, 1897, imposed a liability on the employer, in certain specially hazardous trades, to pay compensation to an injured workman independently of negligence on the part of the master or any person employed by him. Further progress was made in the Workmen's Compensation Act, 1906, which extended the scope of compensation to a number of additional industries and included also various diseases of occupational origin (p. 321).

The Royal Commission on the Poor Laws and the Relief of Distress, 1905-9

The author has attempted in previous chapters of this book to emphasise the close connection between the Poor Law and the Public Health Service, not only because since 1871 they had both been administered at the centre by the same Government Department, but also on account of the fact that the Boards of Guardians undertook such functions as vaccination and the provision of hospital and domiciliary medical services. Up to 1894 the Boards of Guardians in rural areas also acted as local sanitary authorities and employed part-time medical officers of health. This separation of purely Public Health functions into those discharged by the local sanitary authorities and those carried on by the Boards of Guardians was indefensible in principle and inefficient in practice, but it was politically difficult to change this system and many years were to pass before the Local Government Act, 1929, effected an alteration which brought both Public Health and Hospital Services under the control of the same authority. By the turn of the century, however, criticism of the Poor Law system, in its non-medical as well as its medical aspects, was becoming widespread, as those who were in positions of influence began to learn at first hand through their membership of such voluntary associations as the Charity Organisation Society, university settlements,¹ and children's care committees, something of the lives of the poor. Many people were beginning to regard the administration of the Poor Law as inflexible and inhumane, and inconsistent with the dignity of man and the claims of the family. Some, with much justice, criticised the Poor Law as being in the position of a physician who was satisfied with dealing with symptoms and never sought for causes. Society, as a whole, up to that time, had been content to "relieve" destitution without attempting to prevent it. Nor had the Central Authority upheld what have been referred to as the "principles of 1834", which were national uniformity, less eligibility, and the workhouse system. During the last half of the nineteenth century

¹ The most influential of the university settlements was Toynbee Hall.

the principle that the Poor Law should be administered on a uniform system throughout the country, as was the intention of the framers of the Poor Law Amendment Act, 1834, had been extensively departed from. In some parts of England the only method of relief to able-bodied males who were destitute owing to unemployment, temporary sickness or any other cause was the "house"; while in other areas, outdoor relief was granted with some readiness, subject to the performance of a task of work. The position in regard to the relief of women was one of similar diversity.

Of all the principles of Poor Law administration enunciated by the Commissioners in their 1834 Report, that of the importance of ensuring that the position of the pauper should be "less eligible" than that of the lowest grade of labourer seemed to be the most certain, and as recently as 1942 it received the approval of Sir William Beveridge.¹ Nevertheless, the pauper in the workhouse appears to have received food sufficient for full physiological maintenance, whereas at many periods the wages of the lowest grades of independent labourers were insufficient to keep them in possession of their health and working capacity. Moreover, the work required by many Boards of Guardians at this time, as a condition of outdoor relief, was of a much less exacting character than that normally required of the employed labourer. The deterrent effect of the workhouse has always been the main theme of those who have advocated strict Poor Law principles in an attempt to reduce pauperism; but the rigidity of this requirement has varied from period to period, as we have seen, and even from place to place, but at no time—not even during the period of administrative tightening-up between 1871–85—has the "workhouse test," in the sense of a complete substitution of indoor for outdoor relief in the case of able-bodied males, been universally applied.

In dealing with the sick and with the care and maintenance of the children committed to its charge, the Poor Law System had never, since the middle of the nineteenth century, adopted the rigid attitude which it was thought proper to apply to the relief of ordinary destitution, and in most areas Boards of Guardians made the best arrangements within their power to deal with these classes, uninhibited by the fear that they were encouraging pauperism.

The prevailing dissatisfaction with the administration of the Poor Law led to the appointment of a Royal Commission on the Poor Laws and the Relief of Distress in 1905. The Chairman of the Commission

¹ Report of the Inter-Departmental Committee on Social Insurance and Allied Services, 1942, p. 154.

was Lord George Hamilton, and amongst the members were Sir Samuel Provis, the Permanent Secretary to the Local Government Board, Dr. A. H. Downes, Senior Medical Inspector for Poor Law purposes to the Local Government Board, Mr. George Lansbury, Mr. C. S. Loch, Secretary of the Charity Organisation Society, Mrs. Beatrice Webb and Miss Octavia Hill; and the terms of reference were to inquire into the working of the laws relating to the relief of poor persons in the United Kingdom, and into the various means which had been adopted outside of the Poor Laws for meeting distress arising from want of employment, particularly during periods of severe industrial depression.¹ That the Royal Commission covered its field very thoroughly is shown both by the size of its report, which ran to 1,238 pages², and the length of time over which it continued its deliberations. Appointed in 1905, it did not issue its report until 1909. Many Royal Commissions and other bodies have issued majority and minority reports, but the Minority Report of the Poor Law Commission is noteworthy not only on account of the prestige of those, including Mrs. Beatrice Webb, Mr. George Lansbury and Prebendary H. Russell Wakefield, who signed it, but also because of its influence on policy and legislation in the years which followed. Some of the Majority recommendations, in spite of the criticism which they have received, were, however, useful and important, notably proposals to set up a national system of labour exchanges³, to establish unemployment insurance, and to organise relief on the basis of Public Assistance Authorities and Committees in the areas of counties and county boroughs. The Commissioners who signed the Majority Report made the following observations in their last paragraph⁴:—“*Land of Hope and Glory* is a popular and patriotic lyric sung each year with rapture by thousands of voices. The enthusiasm is partly evoked by the beauty of the idea itself, but more by the belief that Great Britain does, above other countries, merit this eulogium, and that the conditions in existence here are such that the fulfilment of hope and the achievement of glory are more open to the individual than in other and less favoured lands. To certain classes of the community into whose moral and material condition it has been our duty to inquire, these words are a mockery and a falsehood.

¹ One of the Acts used outside the Poor Laws to deal with unemployment was the Unemployed Workmen Act, 1905, which established a system of distress committees.

² Including a number of memoranda and the Minority Report.

³ The recommendation was that the labour exchanges should be under the Board of Trade. See p. 630 of the Report.

⁴ Report of the Royal Commission on the Poor Laws, 1909, p. 644.

To many of them, possibly from their own failure and faults, there is in this life but little hope, and to many more "glory" or its realisation is an unknown ideal. Our investigations prove the existence in our midst of a class whose condition and environment are a discredit, and a peril to the whole community."

It is impossible here to attempt even to summarise the brilliantly written Minority Report of the Commission¹ with its ruthless exposure of the social evils of the times amongst the down-trodden "Under-employed," who were "the occupants of the over-crowded one and two-roomed homes of London and Glasgow, Newcastle and Plymouth." "They fill the cellar dwellings which are the shame of Liverpool." "It is recognised that it is among the class of the under-employed casual labourers—constituting, perhaps, only a tenth of the whole town—that four-fifths of the problems of the Medical Officer of Health arise." In the opinion of the Minority Commissioners it was "administratively possible, if it is sincerely wished to do so, to remedy most of the evils of Unemployment." Their main recommendations were as follows :—

The duty of organising the National Labour Market to be placed on a Minister responsible to Parliament; The decasualisation of labour by the absorption, or the maintenance at the public expense, of the surplus of labourers.

Amendments to the Factory Acts to ensure that no child should be employed under the age of 15; no young person under 18 should be employed for more than 30 hours a week; and that all persons so employed should attend Trade Schools for 30 hours per week: Reduction of the hours of railway, tramway and omnibus workers to 48 per week or, at least, to 60: Because there is under-employment of capital as well as labour in times of general depressions of trade, the Government should undertake, so far as practicable, the regularisation of the National Demand for Labour, capital expenditure being increased during the lean years of the trade cycle.

The programme referred to above to include works of Afforestation, Coast Protection and Land Reclamation.

It will be seen from the above brief account of the respective recommendations of the Majority and Minority Reports of the Royal Commission, how wide was the gap separating the approach of these two parties to the solution of the problem of destitution. The Majority Commissioners adopted a business-like attitude to the mere question of administration; and taking a short-term view,

¹ Much of the Minority Report was written, it is understood, by Mrs. Webb.

their proposals were admirable, and some were at various times adopted by the legislature. On the other hand, the Minority Commissioners got down at once to fundamentals, making inquiry into the economic reasons for alternate periods of boom and slump, and of full employment and under-employment; and their recommendations envisaged a large measure of Government direction of labour and would have involved a considerable amount of control of capital. It is doubtful, indeed, whether at that time the necessary knowledge existed to enable any Government to plan the use of labour and capital in such a way that excessive swings of the trade cycle could be avoided and full employment secured. Both reports made their mark upon social history; the Majority Report by recommending practicable proposals for the future administration of the Poor Law which were partially implemented in the Local Government Act, 1929, and the Labour Exchanges Act, 1909 (p. 385); and the Minority Report by urging a new outlook upon the attitude of society towards poverty and destitution. In the past, poverty had been in the stricter periods of Poor Law administration looked upon as a crime and in the milder periods as a fault. The long-term effect of the Minority Report was to persuade the nation to consider poverty neither as a crime nor as a fault, but a consequence of a defective social and economic organisation for which the community was largely responsible.¹ From this report, more than from anything else, arose, slowly but surely, the idea, so familiar to-day but so strange 40 years ago, that the community had inescapable responsibilities towards each individual in it, just as each individual had correlative responsibilities to the community. That brilliant individualism, upon which both the wealth and the misery of the nineteenth century were founded, was soon to give place to the idea of corporate effort and corporate responsibility. The vast schemes of social insurance of which this country is so proud to-day take their source and inspiration from the Minority Report of the Royal Commission on the Poor Laws.

A brief reference has already been made to the Unemployed Workmen Act, 1905², which provided for the formation of Distress

¹ It is well to note Burke's observations on this point: "Government is a contrivance of human wisdom to provide for human wants. Men have a right that these wants should be provided for by this wisdom."

² This Act was repealed by the Local Government Act, 1929.

Committees, generally in urban areas with populations of not less than 50,000. The functions of the Distress Committees were (*a*) to make themselves acquainted with the conditions of labour in their area, (*b*) to register and investigate the circumstances of unemployed workpeople applying to them, (*c*) to endeavour to obtain work with private employers for satisfactory applicants, (*d*) to provide employment on relief works undertaken by the Distress Committees themselves or by local authorities, and (*e*) to assist the unemployed to emigrate or to remove to other areas. Although the usefulness of this Act was obviously limited, it may be regarded as of importance because it established the principle that the relief of distress due to unemployment might be undertaken by methods other than by using the machinery of the Poor Law. The Unemployed Workmen Act also initiated in certain parts of the country, and especially in London, a system of labour exchanges, where workmen seeking employment were registered and attempts made to secure vacancies with private employers. This elementary organisation, which developed with some rapidity between 1905 and 1908, was the forerunner of the national system of labour exchanges, established in 1909.

CHAPTER 4

THE PREVALENCE OF COMMUNICABLE DISEASES

The early part of the twentieth century saw the reduction, in most cases almost to vanishing point, of the more serious infectious diseases such as typhus, cholera, enteric and smallpox. A few figures—as few as possible—may be given to show how great the reduction had been. From 1871–80 the number of deaths from typhus per million of the population had been 57, and this figure was 9 in 1886, 5 in 1890, 1 in 1901, and 0 in 1906. Typhoid was proving a much more intractable problem, and no modern community has entirely succeeded in banishing this disease. But by the beginning of the present century deaths from typhoid were about a quarter of what they had been 40 years previously, *i.e.*, a reduction had occurred from 390 per million in 1869 to 100 in 1903. The annual death rates per million from diphtheria were 261 in 1860, 109 in 1880, 290 in 1900, and 164 in 1907; and, from scarlet fever, 485 in 1860, 675 in 1880, 117 in 1900, and 92 in 1907. Death rates from tuberculosis (all forms) fell steadily from 3,566 in 1851 to 2,682 in 1880, and 1,605 in 1907. Smallpox had withstood communal attack longer than any of the other serious infectious diseases, except perhaps typhoid, but after 1906 the incidence of this dreaded disease dropped to negligible proportions and it never became a serious Public Health problem again.¹

Epidemics of infectious disease, especially typhoid, did occur during this period and it will be necessary in this section to mention a few of them. Some bacteriological researches, arising from an epidemic of scarlet fever in 1885 which was described in Part II, Chapter 4 (p. 179), require discussion first. It will be remembered that in the Hendon outbreak a number of people were infected with scarlet fever through the ingestion of milk derived from cows suffering from septic lesions on the teats and udders. Klein had isolated a streptococcus both from the lesions on the cows and from the patients, which he regarded as the causative organism of scarlet fever, and he gave it the name of *Micrococcus scarlatinae*. Klein's conclusions were not generally accepted by bacteriologists at that time largely on the ground that the streptococcus is a common

¹ The variola minor or alastrim, which gained a hold in the 'twenties and 'thirties, is a very mild disease bearing no resemblance, as regards severity, to nineteenth century smallpox.

organism and it was difficult with the methods then available to prove with any degree of certainty that two organisms of this kind, derived from different sources, were identical. Dr. Mervyn Gordon associated himself with Klein in these investigations at a time when "return cases" of scarlet fever were causing difficulties in administration. The work which Gordon undertook was to study the behaviour of streptococci generally in an attempt to ascertain "the several biological phases of each member of the group under differing conditions and according as it was derived from different sources."¹ This was a laborious undertaking lasting upwards of two years but, on its conclusion, Gordon had confirmed his and Klein's previous observations as to the constant presence of *Streptococcus scarlatinae* in the throats of patients suffering from mild and uncomplicated scarlatina. He also showed, at least as a strong inference, that the predominant micro-organism in the bodies of persons dying from this disease is not only a bacterium of the streptococcus group, but a streptococcus "which is, derivatively and potentially, one and the same with *Streptococcus scarlatinae* or *conglomeratus*."²

The importance of bacteriology in relation not only to epidemics but also to the activities of the Public Health Service generally had been fully recognised for many years by the Local Government Board, and from the laboratories of the research workers subsidised by that Department there appeared accounts of investigations into the manifold problems presented by the pollution of soil, water and foods by organisms which were only then beginning to be understood. Although the work of these investigators was designed for strictly utilitarian purposes it produced, almost as by-products, developments in bacteriological techniques and methods which were of great value to later workers. The name of Klein has already been mentioned, but apart from him, there was a brilliant team of investigators at the service of the Local Government Board during the last ten years of the old, and the first ten years of the new century. Some of the more prominent of these investigators were Drs. A. C. Houston, S. Monckton Copeman, F. R. Blaxall, F. W. Andrewes, R. Bruce Low, W. H. Power, H. F. Parsons, W. H. Hamer, R. Thorne Thorne and R. J. Reece.

Houston's special subject was the bacteriology of water supplies and sewage and almost all the foundations of our knowledge in regard to the protection and purification of water are derived from

¹ Annual Report of the Medical Officer to the Local Government Board, 1899-1900, p. xvii.

² *Ibid.*, pp. xvii-xviii.

his painstaking researches carried on mainly during the period from 1897 to 1905. He was appointed Director of Water Examination to the Metropolitan Water Board in 1905¹. Dr. (later Sir Richard) Thorne Thorne investigated a number of epidemics, but his administrative work was associated with the provision and equipment of isolation hospitals on which he was an authority. He was appointed Medical Officer to the Local Government Board in 1895 and held this post until his death in 1899. Dr. W. H. (later Sir William) Power was an epidemiologist and was concerned for many years in the investigation of outbreaks of infectious disease in this country, including the St. Marylebone outbreak of milk-borne enteric fever in 1873 and those of milk-borne scarlet fever at St. Pancras in 1882 and Hendon in 1885. His deductive reasoning as to the cause of these epidemics, especially the last, was of first class quality. Power's investigations into aerial convection in the case of smallpox led to rules being formulated in regard to the siting of smallpox hospitals. He became Medical Officer to the Local Government Board in 1899.

¹ The following papers by Sir Alexander Houston were published in the Annual Reports of the Medical Officer of the Local Government Board:—

Report on Bacteriological Evidence of sewage pollution of elsewise potable waters (with Dr. Klein)	1897-8
Reports on Chemical and Bacteriological examination of soils, and procedures preliminary to inoculations of soils with cholera, etc.	1897-8
Notes on Bacterioscopic Examination of Drinking Water with reference to Streptococci and Staphylococci	1898-9
Further Report on sewage pollution of elsewise potable waters (with Dr. Klein)	1898-9
Report on inoculation of soils with microbes	1898-9
Reports on the Chemical and Bacteriological examination of "washings" of soils	1899-1900
Report on the value of examination of water for Streptococci and Staphylococci	1899-1900
Bacterioscopic analysis of different cereals and foodstuffs	1899-1900
Reports on behaviour of specific microbes in relation with cereal products (with Dr. Klein)	1900-1
Reports on inoculation of soil with sewage	1900-2
Report on Bacteriological Examination of Stools of healthy persons	1902-3
Report on Identification of <i>Bacillus Typhosus</i> in Stools (with Dr. Klein)	1902-3
Reports on Moorland Water and their action on Lead	1903
Bacteriological Examination of certain Public Water Supplies	1903-4
Reports on Bacteriological Examination of normal Stools, intestinal contents of sea-fowl and fish, and certain Public Water Supplies	1903-4
Report on the Bacteriological Examination of deep well waters, upland waters and cow-dung	1904-5

Hospital Accommodation

The general power to erect hospitals for the treatment of patients suffering from infectious diseases was contained in the Public Health Act, 1875,¹ and many hospitals of this kind, mostly small and not very well staffed or equipped, were opened by local authorities during the last quarter of the century. Isolation Hospitals Acts of 1893 and 1901 gave added powers of making local arrangements for the use of these hospitals, and the latter Act facilitated the transfer of infectious diseases hospitals from the ownership of district councils or joint boards to that of the county councils.

Plague

In the year 1901 there occurred an exceptional outbreak of plague in Europe [part of a pandemic originating at Hong Kong in 1894] which, to a minor extent, affected this country. A number of ships arrived at ports in this country harbouring rats infected with plague, and one ship—the s.s. *Friary*—put into Hull with a number of human cases. In spite of the amount of infection being carried into the country during that year human cases arose only in two ports—Cardiff and Liverpool. As far as is known no case of true plague occurred in Liverpool until September. On September 29th a young man was admitted to the Liverpool Workhouse suffering from fever and buboes, and he died 24 hours later from “septicæmia.” There was no suspicion of plague at the time, but excised glands were handed to Dr. Griffiths for examination and on October 18th he reported to the workhouse surgeon that he thought the case one of plague. On the suggestion of Dr. Hope, the Medical Officer of Health, the bacteriological results were handed to Professor Boyce and Dr. Balfour Stewart, who were not able to confirm Dr. Griffiths’ finding. Two additional cases occurred and, on inquiries initiated by Hope, it appeared that unrecognised small outbreaks of plague had previously broken out in at least four families, living near to each other. Altogether, eleven persons contracted plague in Liverpool between the end of September and the end of October, 1901, of whom eight died.² Every precaution was taken to abate any possible epidemic, including the destruction of rats at the docks and the use of guards on the mooring ropes of ships to prevent the landing of rats.

¹ The phrase used in Section 131 of the Public Health Act, 1875, was “hospitals or temporary places for the reception of the sick.”

² Annual Report of the Medical Officer of the Local Government Board, 1901–2, p. 339.

Outbreaks such as this have international consequences, and when it became known that there was plague in Liverpool, some foreign countries began to impose severe quarantine restrictions on arrivals from that port. "Dr. Hope at once placed himself in communication with the consular representatives of the foreign powers at Liverpool, and explained to them the facts of the outbreak and the measures which had been taken to suppress it ; and later, with a view to disarm the fears of those nations who were most apprehensive, he submitted to the consuls details of the precautions which were being taken in respect of vessels leaving Liverpool for foreign ports."¹

Smallpox in London

In 1901 the presence of smallpox in Paris was causing the Medical Officers of Health in London to be especially vigilant and several cases were detected and isolated, without further spread, during the summer of that year. Nevertheless, a little later, in spite of the extreme care of the health officials, there occurred in South St. Pancras and the contiguous areas a number of cases of smallpox, the source of which could not be traced, and by the end of September the disease was disseminated over a wide area of London. Early in November, 1901, notifications rose to 227 and by January, 1902, they had reached the figure of 546 in a fortnight—cases occurring all over London.

The total notifications of smallpox in London from the beginning of the epidemic to the end of March, 1902, amounted to over 6,000. Action both by the Local Government Board and by the Medical Officers of Health of the areas affected was prompt and efficient. An interesting recommendation by the Board was for "any officer employed by the Council who is to come in close relation with persons or articles infected with smallpox, being first protected by efficient re-vaccination."² Although the measures taken by the Metropolitan Borough Councils were on the whole efficient, the Board's Report complains about the attitude of some of them in regard to vaccination. "Thus, one such council, which repeatedly rejected the direct advice of the Board in the matter, in the end paid penalty by loss, temporary or permanent, of the services of no less than five of their officials through attack by smallpox."³

¹ Annual Report of the Medical Officer of the Local Government Board, 1901-2, pp. 341-2.

² *Ibid.*, p. xxxvi.

³ *Ibid.*, p. xxxix.

There appeared, also, to have been much obstruction on the part of some of the Boards of Guardians—the vaccination authorities—and this had the effect of hindering the efforts of the Metropolitan Boroughs to abate the epidemic in their areas by measures which inevitably involved the encouragement of vaccination. In the following year's report the Medical Officer emphasised the desirability of the chief responsibility for vaccination administration in the face of a smallpox epidemic being transferred from the Guardians to the Public Health Authority.

The Liverpool Outbreak of Smallpox, 1901-3

This outbreak, which was a serious one, resulted from a case of smallpox which had come through the Port of Liverpool in December, 1901, and infected, as the first indigenous case, the son of a lodging-house keeper whose establishment was situated near the centre of the city. Unhappily this case was concealed and the boy, while in a highly infectious state, was removed to another house in Liverpool. There is little doubt that this case was responsible for the large epidemic which followed, during the course of which 2,278 persons were found to be suffering from the disease.¹ The outbreak lasted until December, 1903, and caused much suffering and considerable financial loss, directly and indirectly, to the city. At that time the hospitals available for the reception of smallpox cases were situated at Park Hill, Priory Road and Fazakerley. The latter hospital, outside the then City boundary, had few dwellings near at hand, while Park Hill and Priory Road were situated near to populous areas.

One of the interesting features of the 1901-3 outbreak of smallpox in Liverpool was the correspondence which passed between the Corporation and the Local Government Board on the subject of what is termed the "aerial convection" of this disease. This theory concerning the transmission of the *contagia* of smallpox for considerable distances through the action of air currents had been introduced many years previously by Mr. (later Sir William) Power to explain the excessive incidence of cases in populous areas near to smallpox hospitals. As a result of this belief, which became the official view of the Local Government Board, conditions were laid down in 1902 in respect of loan sanctions forbidding the siting of a smallpox hospital within half a mile of a population of as many as 600 persons. The doctrine of the aerial convection of smallpox, probably incapable of direct proof, was inferred from many inquiries

¹ Report by Dr. R. J. Reece on Smallpox and Smallpox Hospitals at Liverpool, 1905.

on the incidence of the disease in dwellings within a certain distance of smallpox hospitals, the assumption being that if the maximum distribution of cases in relation to the number of houses occurred within a quarter of a mile radius, decreasing as the distance increased, there was a strong presumption that infection had been carried directly by air from hospital to dwelling. Power's original memorandum supporting the theory of aerial convection being responsible for the excess of smallpox cases in the vicinity of smallpox hospitals was entitled "On the influence of the Fulham Smallpox Hospital on the neighbourhood surrounding it," and it was published in the Annual Report of the Medical Officer of the Local Government Board for 1880-1. In the intervening period between that date and the smallpox epidemics in London and Liverpool which began in 1901, a large amount of circumstantial evidence had been collected by various observers purporting to show the causal relationship between the presence of smallpox hospitals in populous neighbourhoods and the excessive incidence of the disease in the houses adjoining.¹

The difference of opinion between the Local Government Board and the Liverpool Corporation's medical advisers arose as a consequence of an investigation by Dr. R. J. Reece in 1904, on behalf of the Board, into various aspects of the smallpox epidemic which had recently terminated. Dr. Reece's report, which was of a painstaking and detailed character, resolved itself into an account of an investigation into the possibility of the spread of smallpox by aerial convection from the three Liverpool hospitals which had admitted cases during the epidemic—Priory Road, Park Hill and Fazakerley. In inquiries of this kind the method used was to draw on a spot-map, with the hospital as the centre, four

¹ The following are some of the references:—

Report of the Royal Commissioners appointed to inquire respecting Smallpox and Fever Hospitals, 1882.

Report on later observations (1881-4) of the influence of Fulham Smallpox Hospital on the neighbourhood surrounding it, by Mr. W. H. Power. (Annual Report, L.G.B., 1884).

Annual Report of the Medical Officer of Health of St. Pancras, Dr. Shirley F. Murphy, 1884.

Report by Mr. W. H. Power on the behaviour of Smallpox at West Ham during the epidemic of 1884-5. (Annual Report, L.G.B., 1886).

Notes on an outbreak of Smallpox at Nottingham in 1887-8, by Dr. B. A. Whitelegge, Medical Officer of Health. *Practitioner*, Vol. XLI, No. 1, p. 66.

Report on the Health of Oldham for the year 1892, by Dr. James Niven.

Report on Smallpox in Glasgow, 1900-2, by Dr. Chalmers, Medical Officer of Health.

Report on Epidemic Smallpox in the Union of Orsett, 1901-2, by Dr. Buchanan.

concentric circles with radii $\frac{1}{4}$ mile, $\frac{1}{2}$ mile, $\frac{3}{4}$ mile and 1 mile ; and to note the number of cases of smallpox occurring in the four areas lying inside or between the circles. This method Reece followed, and he came to the following conclusions :—

- (i) Inhabited areas within a mile of each of the three Liverpool smallpox hospitals have suffered more severely from smallpox than the city as a whole.
- (ii) Exceptional incidence of smallpox within these areas has corresponded in point of time with the use of these hospitals for the treatment of acute smallpox cases.
- (iii) Broadly speaking, within these hospital areas the dwellings nearer to hospital have sustained a far heavier incidence of smallpox than those farther away.

If the Local Government Board had acted upon this report, the question of closing down all three hospitals for the admission of smallpox would have had to be considered, and this would have entailed serious consequences both to Liverpool and the surrounding areas if another epidemic occurred. The Board had, however, already approved of the siting of the Fazakerley Hospital and could hardly withdraw this approval on the somewhat tenuous evidence of the report. The Corporation's argument was that the cases occurring in the houses within the concentric circles had been infected either from the mass of infection in the City or directly from staff who, breaking the rules, had left the hospital without permission. Dr. E. W. Hope, the Medical Officer of Health, who, like his colleagues, saw no reason to suppose that there was any scientific validity in the prevalent theories of aerial convection, brought forward evidence to show that some of the cases within the circles had been infected directly from hospital staff. He also urged that the theory of aerial convection was not generally accepted by experts, especially by medical officers of health, and mentioned the judgment of Mr. Justice Farwell in a case, turning upon aerial convection, against the Corporation of Nottingham. The learned Judge observed, "with regard to the plaintiff's historical instances, if I may so call them, they have already figured in former actions . . . and have never been accepted as sufficient." Hope's most telling argument against the validity of usual methods of proof of the aerial convection theory was to produce a spot-map centred on the Netherfield Road Fever Hospital which showed on the basis of the reasoning used in connection with the others, that that hospital had infected many cases in the vicinity. But the Netherfield Road Hospital had not been used for smallpox cases ! Sir W. H. Power's theory may have appeared to be a reasonable one in 1880–1, when

notification was not available and when, therefore, very many cases were unknown to the medical authorities. Moreover, at that time, the miasmatic theory of the origin of infectious diseases had not long been officially discarded and still had its influence upon the minds of those who had been brought up on it. The doctrine of the aerial convection of smallpox, *i.e.*, the conveyance of particulate matter from patients for long distances by air currents, was not precisely the miasmatic theory but it was a reasonably close relation. It is a little surprising, nevertheless, that this theory lasted so long. In all the epidemics in the first years of the present century, the greater the care devoted to tracing the methods by which cases were infected, the fewer there were left to be explained on the basis of air-borne transmission. Some of the outbreaks in this country in recent years, due in the first place to ship-borne infection, and comprising only a few cases, have been completely explainable on the ordinary grounds of infection by near contact, and did not require any such far-fetched hypothesis as aerial convection. The difficulty occurs when there are hundreds of cases, a proportion of which are missed by the inspectors, so that a crop of "unexplainable" cases arises. But it is illogical to assume, as many of the protagonists of this theory have, that because the mode of infection of a minority of smallpox patients during a large epidemic cannot be traced, they must have contracted the disease as a result of aerial convection.

The conquest of the virulent form of smallpox in this country and in most parts of western Europe was a major feat in preventive medicine. It is generally agreed by epidemiologists that this successful end to a campaign which in England had lasted since 1840 was due to the vaccination arrangements which, towards the end of the century, were becoming increasingly efficient. The introduction of glycerinated calf-lymph had rendered the practice of re-vaccination easy.

The Public Health Service, aided by the Infectious Diseases Notification Acts, was at last in a position to take effective steps to control an outbreak of smallpox in its early stages, when the number of cases is few and the ascertainment of contacts possible. By the end of the century medical officers had become highly efficient in the diagnosis of smallpox, thanks to the work of Ricketts and Byles (p. 371). The technique of the tracing of contacts was well understood by both medical officers and sanitary inspectors who, almost invariably, enjoyed the cordial co-operation of general practitioners whose duty it was to notify.

Notification, early diagnosis, the search for missed cases, the vaccination of contacts and, if thought necessary, area vaccination together comprised the technique which, in the hands of the Public Health Service, finally overcame this age-long menace to life and health in the community.

The above is the commonly accepted view, but it is impossible, in the present state of our knowledge, to be too dogmatic on a matter of this kind. Some epidemiologists indeed, believe that the decline in the incidence and mortality of smallpox which occurred in Western Europe during the nineteenth century was part of a downwards secular trend of the disease, accelerated to a greater or lesser extent by the practice of vaccination.

Two Outbreaks of Enteric Fever

As has been said, there were many outbreaks of enteric fever during the nineteenth century and the early part of the twentieth century, and most of these had well-defined characteristics and presented no features of unusual importance or interest. The two epidemics now to be described possessed somewhat unusual features either in regard to the agent which carried the infection or the method by which the infection was transmitted.

The occasion of the first outbreak was the unusual one of a mayoral banquet at the Guildhall, Winchester, on November 10th, 1902, after which 62 out of the 134 guests became ill. Most of the sick guests quickly recovered, but 10 contracted enteric, and it was on account of this fact that Dr. H. T. Bulstrode of the Local Government Board was sent down to investigate. His procedure—the usual one in such circumstances—was to make detailed inquiries about the foods which each of the infected guests had eaten. We may skip the detail, of which there is a good deal in investigating a complicated food epidemic, and report the fact that all the persons who later suffered from enteric fever had partaken of oysters, which some of them thought were not very good. All but two of those who were sick, but did not contract enteric fever, had eaten oysters.

This epidemic, and a similar one following a mayoral banquet on the same evening at Southampton, were definitely traced by Dr. Bulstrode to oysters which had been taken from ponds at Emsworth where they were exposed to the risk of contamination from crude sewage.¹ Both Dr. Mearns Fraser, Medical Officer of Health of Portsmouth, and Dr. A. Newsholme, Medical Officer of Health of Brighton, had noted a number of cases of typhoid in

¹ Annual Report of the Medical Officer of the Local Government Board, 1902-3, pp. 129 *et seq.*

their respective areas which had been traced to the ingestion of oysters coming from the Emsworth ponds.

The Lincoln outbreak of enteric fever occurring in 1904–5 was on a large scale, and between December 2nd, 1904, and May 6th, 1905, 1,006 cases were notified. In this epidemic the peak was reached in the week commencing January 29th, 1905, when 265 cases were notified to the Medical Officer of Health of Lincoln, with other infections in the surrounding areas. Investigations showed that the water supply was infected and Dr. Klein actually isolated *Bact. typhosum* from certain parts of it. The problem resolved itself into treating the water before it reached the filter beds (which were probably infected), and Dr. (later Sir Alexander) Houston proposed the addition of *Chloros*, containing sodium hypochlorite, and therefore possessing antiseptic properties, and this was done from February 11th, 1905, onwards. It will be remembered that chlorine was used to sterilise the mains during the Maidstone epidemic of 1897 (p. 173).

These two examples of enteric outbreaks well illustrate the differences in scale between epidemics spread by milk or shellfish on the one hand and those spread by water on the other. A large outbreak with the weekly number of cases rapidly mounting to a *crescendo* is *likely* to be a water-borne epidemic. But, of course, a water-borne epidemic is not necessarily a large one. There were many small outbreaks where a few people were infected by water from shallow wells. A large epidemic only occurs when the contaminated water is part of a town's supply and therefore consumed by a large number of people. Oysters or any other articles of food, coming from a single source, are seldom consumed by a sufficient number of people to provoke a large epidemic. Apart from water, the only article normally ingested by a sufficient number of persons to cause a serious outbreak of enteric fever is milk supplied by a large firm, and, because such milk is nearly always pasteurised, such a catastrophe has seldom happened in this country. There have, however, been a few examples of fairly large scale outbreaks of enteric fever due to cream cakes.¹

Arsenic in Beer²

One of the most interesting of the many outbreaks of illness due to the contamination of articles of food and drink which were

¹ The author, in 1941, was concerned with an outbreak of paratyphoid B, during which several hundred cases occurred, which was transmitted by infected cream contained in cakes.

² This, although not an outbreak of a communicable disease, is described here as a matter of convenience.

reported during the earlier part of the present century, was the occurrence of numerous cases of peripheral neuritis in Manchester and Liverpool and the surrounding areas during the second half of the year 1900. The first cases appeared in Salford and were reported to Dr. C. H. Tattersall, the Medical Officer of Health of that county borough, by Dr. Cran, who referred to the large number of persons in his practice suffering from what appeared to be alcoholic peripheral neuritis. Shortly after, Dr. E. S. Reynolds reported the occurrence of similar cases to Dr. James Niven, the Medical Officer of Health of Manchester.¹ In Liverpool, in the latter half of the year, there had been a marked increase in the number of persons seeking hospital relief "on account of a form of disease usually associated with alcoholic poisoning (peripheral neuritis), but in many of these cases the paralysis was accompanied with more or less marked pigmentation of the skin."² At first it was thought that the Liverpool cases were due to the inordinate consumption of alcohol (a not uncommon occurrence in the city at that time), but this explanation was not regarded as completely satisfactory and light was only shed on the Liverpool outbreak after Reynolds had reported the presence of arsenic in the beer consumed by his patients.

In Salford, on November 23rd, Professor Sheridan Delépine discovered the presence of arsenic in a sample of glucose obtained from a brewery in Salford, and Dr. Niven himself, assisted by Mr. R. M. Rowe, examined by the Marsh Test beer obtained from breweries in Manchester. Dr. Tattersall had in the meantime visited Liverpool, as the indications pointed to the arsenical contamination of the beer from glucose obtained from Messrs. Bostock's of Garston. He also visited Messrs. Nicholson's of Leeds, where the sulphuric acid used in the conversion of starch into sugar had been obtained, and this, the *fons et origo mali*, was found to be contaminated with arsenic.

The Public Health staffs in Manchester, Liverpool and Salford acted with great energy in the presence of this formidable menace to life and health, and very many samples of beer which might have become contaminated with the arsenical glucose were examined by Delépine in Salford, Niven and Rowe in Manchester and Campbell Brown in Liverpool. Niven says that the largest amount of arsenic found in any beer by Professor Delépine was $1\frac{1}{2}$ grains per gallon,

¹ Niven, James, *Observations on the History of Public Health Effort in Manchester*, p. 159.

² Annual Report of the Medical Officer of Health of Liverpool (Dr. E. W. Hope), for the year 1900, p. 129.

while he himself discovered as much as $\frac{1}{2}$ grain per gallon. These amounts, and, in fact, lesser amounts, were sufficient to cause illness or death in view of the large quantities of beer then consumed. According to Dr. Niven, it was not at that time unusual for men to consume as much as two gallons of beer a day, and Dr. Hope, the Medical Officer of Health of Liverpool, remarks that having regard to the enormous quantities of beer consumed in some districts of the city, it was obvious that if arsenic were present, nothing but the promptest measures could avert a calamity. The whole of the beer on premises where suspicion had been confirmed was poured into the sewers. This put a stop to any further cases.

There is little doubt that the number of cases of peripheral neuritis, severe and slight, due to arsenical contamination of beer in the years 1900 and 1901 was very large. Niven estimated the number of cases in Manchester during that period at 5,600 ; and Tattersall reports a total of 107 deaths from this cause in Salford up to the end of January, 1901. According to Hope of Liverpool, the number of authenticated cases of arsenical poisoning in that city during the year 1900 was 100, with three deaths. Early in the following year, however, three persons poisoned with arsenical beer during the preceding October and November, also died.¹

International Conferences

One of the most important duties of the Medical Department of the Local Government was to interest itself in the diffusion of some of the more serious infectious diseases abroad, especially in those countries with which Great Britain was associated through commercial and trade interests. Plague in India, or cholera or smallpox on the continent of Europe or in Egypt, for example, were of direct interest to the Public Health authorities in this country because of the danger that these diseases might be imported from abroad. It was not for any slight reason, therefore, that, in 1865, John Simon sent Dr. Burdon Sanderson to North Germany and Dr. Whitley to Russia when reports of the occurrence of plague and other serious infectious diseases in these countries were received in London.² Whatever the political relations of the various nations might be, the prevention of plague, smallpox, cholera or yellow fever always constituted a common bond of interest between them. From this common interest there arose the practice of holding international sanitary conferences at frequent intervals, often for the purpose of bringing agreements on matters of

¹ Annual Report of the Medical Officer of Health of Liverpool for 1901, p. 157.

² Eighth Report of the Medical Officer to the Privy Council, 1865.

epidemiology into line with current advances in medical knowledge.¹ A conference of some importance was that held in Paris in 1894, which had for its object the compilation of regulations to prevent the diffusion of cholera through the Mecca Pilgrimage. Owing to the desire to secure the adhesion of Turkey, the Convention arising out of the Paris Conference of 1894 was not ratified by this country until 1898. A further Convention was drawn up in 1903, and this dealt with plague and cholera.

One of the most important of the conferences on this subject was the International Sanitary Conference of Paris of 1911-2, at which Dr. R. W. Johnstone represented the Medical Department of the Local Government Board. The main reasons for calling this conference were, first, the recasting in the light of the latest medical knowledge of those portions of the Convention of 1903 which referred to plague and cholera and, secondly, the insertion of regulations in regard to yellow fever.² Since 1903 the rôle of rats and rat fleas in the conveyance of plague had become more fully recognised, largely as a result of the work of the Indian Plague Commission.³ As regards cholera, certain sanitary authorities had adopted the practice of detaining passengers and crews of ships for bacteriological examination, contrary to the provisions of the Convention of 1903. The Conference, which was the largest ever assembled up to that time, had the question of regulations for the control of yellow fever on its agenda because agreements in regard to this disease had already been arrived at by local conferences in the West Indies in 1904 and at Washington in 1905. The *Office International d'Hygiène Publique* had been established in 1907, and it conducted the preliminary work in preparation for the Conference. This Convention of 1911-2, which dealt with plague, cholera and yellow fever, was the most comprehensive up to that time of all the sanitary conventions, and it replaced those signed in 1892, 1893, 1894, 1897 and 1903.

¹ The first of these conferences was held in Paris in 1851.

² Annual Report of the Medical Officer of the Local Government Board, 1911-2, p. li.

³ 1906-10.

PART IV

THE PERSONAL HEALTH AND SOCIAL SERVICES— THE PERIOD OF DEVELOPMENT, 1907-29

The period covered by this Part may be regarded as extending from 1907 to 1929. During this period of 22 years the resources of a wealthy nation were poured out in an effort to make some provision for the health and social security of those members of the community who, because of sickness, unemployment, old age or other circumstances, were unable to look after themselves. These years, covering the rise and development of the Personal Health and Social Services, comprise perhaps the most important epoch in the social history of this country. The first 10 years saw the establishment of the Tuberculosis and Venereal Diseases Services, the organisation of the State provision of domiciliary medical care under the National Health Insurance Act, and the early stages in the development of the great social security schemes including unemployment insurance, widows' and old age pensions, maternity grants, etc. During the second half of the period, the Ministry of Health was established, superseding the aged and somewhat decrepit Local Government Board, and a gigantic attempt was made by the State to solve the age-long problem of providing houses to be let at rents which persons in the lower income-groups could afford to pay.

All these subjects are discussed in chapters which comprise Part IV, in some cases briefly, in some at greater length. The influence of the 1914-18 war in retarding the development of some of the Personal Health Services and hastening the development of others is estimated, and an attempt is made to describe the outstanding progress in all branches of these Services attained in the years following the establishment of the Ministry of Health. The British health and social services were, by the end of this period, the best in the world, but they displayed defects due to the haphazard way in which they were established—they were incomplete, covering only a portion of the community's needs, and they suffered from a lack of co-ordination owing to the large number of different authorities which took part in their administration.

Although the reader's attention is mainly directed in this part of the book to the newer Personal Health and Social Services, the history of the older Public Health Services is not entirely neglected. Modern views in regard to smallpox and vaccination are discussed in Chapter 5 and in the same chapter an account is given of

epidemics of little-known infectious diseases, investigated by the Central Department during and after the war. The great pandemic of influenza, reaching this country from abroad in 1918, is, in view of its importance and its devastating effects on the community, described at some length.

CHAPTER 1

NATIONAL HEALTH INSURANCE AND ALLIED SERVICES

Up to the end of the nineteenth century, Parliament and the nation were satisfied that the relief provided by the Poor Law was adequate and sufficient for the minimum needs of those members of the working classes who fell into temporary difficulties owing to unemployment or sickness. The aged poor were always regarded as being in a rather different category from the able-bodied, and at most periods since 1834 Boards of Guardians had been willing to grant sufficient out-relief to those who had reached the age of 70 to enable them to exist at the low standards of life regarded as proper for those who had no relatives to support them or who had not been successful in accumulating sufficient savings to provide for their old age.

Both reports of the Royal Commission on the Poor Laws readily accepted the principle of the provision of pensions by the State, subject to an income limit, for all persons reaching the age of 70 and there was therefore little political opposition when the Liberal Government in 1908 introduced legislation into Parliament for this purpose. The Old Age Pensions Act, 1908, provided non-contributory pensions of 10s. per week with adjustments if applicants possessed some small means, and these were obtainable as a matter of right by all who qualified, without any Poor Law stigma attaching to them. Old Age pensions were the second small breach to be made in the massive structure of the Poor Law, the first being the Unemployed Workmen Act, 1905 (p. 283).

One of the most unsatisfactory parts of the social structure during the earlier years of the twentieth century was the absence of any regular system of medical care for members of the lower income groups during sickness of either long or short duration. The voluntary hospitals were performing work of great importance in the treatment of the more serious of the illnesses of the working classes, and, true to their tradition of being in the van of medical progress, many of these institutions provided care of a high standard for some proportion of the sick poor. Nowhere, however, in the country were there enough—or nearly enough—voluntary hospital beds to treat more than a small fraction of the serious illnesses occurring amongst the populations of the large towns, and the remainder of this work had to be carried out by hospitals which were still under Poor Law control. In theory, as we have seen, these

hospitals and the sick wards in Poor Law Institutions admitted only those who were destitute ; but the definition of "destitution," when applied to illness requiring admission to hospital, had been very much widened by administrative rulings of the Central Authority. On several occasions in its history, the law relating to the relief of destitution has become out of touch with national needs until a bridge, constructed on the model of a "legal fiction," has joined the two. This was the position at the time of the issue of the report of the Royal Commission on the Poor Laws. One of the interesting "fictions" at that period was the assumption that payments by patients admitted for treatment to Poor Law hospitals were made by relatives contributing to the relief of the "pauper" according to their legal duty. The Royal Commission has some acid comments to make about this system. "The amount charged upon 'relations' for the treatment in Poor Law Infirmaries of patients in whom they are interested," the Minority Report says, "is large, and rapidly increasing. We were, for instance, informed that the three Boards of Guardians of Liverpool recover over £4,000 a year from their patients, whilst the general hospitals of that great city do not receive from their patients more than £400 a year. We notice, in the evidence by the Medical Superintendent of one of these Poor Law Infirmaries, that the fiction that these repayments come from the relations of the 'destitute' persons whom the Guardians are maintaining, is quietly abandoned. It is taken as a matter of course that the maintenance and medical treatment which is being afforded by the Destitution Authority to its patients, is, as a matter of fact, being paid for, to a considerable extent, by these 'destitute' persons themselves. The fact, which is not peculiar to Liverpool, that the Poor Law Infirmaries are receiving no small number of 'paying patients' is an interesting corollary of the gradual transformation that we have already described of some of the institutions of the Destitution Authority into public establishments, made use of indiscriminately by the wage earning and lower middle classes."¹

The report emphasised the anomalous situation which this divorce between strict law and the necessities of administration had brought about. "A person," it comments, "who is paying for his treatment in the Liverpool hospital (known as the Mill Road Infirmary), however much he pays, becomes a pauper ; is included in the statistics of pauperism published by the Local Government Board ; cannot, in law, vote at the election of the West Derby Board of Guardians ; and will be excluded, or not, from the register of

¹ Report of the Royal Commission on the Poor Laws, 1909, p. 930.

Parliamentary elections according to the varying interpretations which the officers may put on the phrase 'medical relief'."

Thus, the situation that had arisen owing to the fact that the voluntary hospitals did not possess sufficient beds for the medical needs of the people, and the Poor Law institutions could only, in law, admit the destitute, had been partly met by an administrative fiction and partly by a frank illegality. It was recognised, however, both before and after the publication of the Royal Commission's report, that the country's arrangements for the treatment of serious sickness in hospital were unsatisfactory. To depend upon the Poor Law for the major part of the treatment of illness of a serious character seemed an anachronism in the twentieth century, when progress in medicine had conferred the power to cure or relieve a multitude of conditions which were beyond the scope of the profession a few years previously. There were, however, differences between the views of the Majority and Minority Reports as to the way in which the admittedly unsatisfactory position of the hospital treatment of the sick could be remedied. The Majority Commissioners did not wish to transfer all medical treatment provided at the public expense to Public Health Committees. They agreed that the Poor Law should be transferred to the administration of the larger local authorities, but they thought that the duty of providing hospital treatment should become the responsibility of Public Assistance Committees of these authorities and not the Public Health Committees. On the other hand, the Minority Commissioners urged that all medical treatment provided by the major local authorities, should be unified under one Committee. The difference was one of principle and not of detail, since the recommendation of the Majority Report meant that hospital treatment would still be associated with the Poor Law.

The 20 years' delay in settling this question was of undoubted disadvantage to Public Health; and it is difficult to understand the reasons for postponing reforms which were admitted on all sides to be urgent. One fact to be noted in this connection is the great weight, in different political circles, which each of the two reports of the Royal Commission exerted. The balance between the two sets of recommendations was so even that it was politically difficult for Parliament to make a decided move in either direction. But the effects of this lack of decision in regard to the Report of the Royal Commission were momentous; and instead of some of the new social services being administered by reformed local authorities, as might have happened, a whole series of *ad hoc* agencies of government was created, as year after year, Parliament, under the

control of the great Liberal Government, elected in 1906, passed the first comprehensive measures of social reform in the history of this country. At that time political justice had to some extent been attained¹; the era of economic justice was only then beginning.

Necessity, nevertheless, was enforcing a number of encroachments upon what had been the strict domain of the Poor Law. Local authorities, even as early as 1909, were accommodating many cases of infectious diseases in their own fever hospitals and not a few of them had built sanatoria for the treatment of patients suffering from tuberculosis; many necessitous school children were being fed by the education authorities and all were being medically inspected; and a few of the larger county boroughs had even gone to the extent of providing general and accident hospitals. This work of the local authorities had not, as yet, gone very far, but it was rapidly developing; and uninhibited by tradition, and exercising their functions largely unfettered by laws or regulations, these authorities were working on new principles which had never been tried by the Poor Law. The policy of the Poor Law was to deter; the principle of the new Public Health Services was to prevent. Prevention of disease had, indeed, been the watchword of that Service since its inception in 1848. In the twentieth century its methods were changing, but the original objectives remained the same—to order the environment, either communal or personal, in such a way that men no longer fell a prey to preventable diseases. Sanitation and personal cleanliness had largely reduced the incidence of cholera, dysentery, enteric and typhus. The new Personal Health Services, such as the communal care of the mother and the young child and the medical inspection of school children, were destined in a short space of years to raise the standards of health and physical fitness of these important sections of the community.

At this period the arrangements for the domiciliary care of the sick were as unsatisfactory as the provision of hospital accommodation. The Poor Law domiciliary medical service was undertaken by a number of district medical officers, employed by the Guardians, who attended poor persons in their homes at the behest of relieving officers. District medical officers were almost invariably engaged on a part-time basis and the standards of payment were insufficient to ensure a satisfactory service. This Poor Law service for the treatment of those who were too poor to afford to pay a private practitioner, only applied to a small proportion of the wage-earners, and the remainder were compelled to pay doctors' bills as best they could, with the result that they sought medical advice as infrequently

¹ The limiting words are used in this sentence because at that time the franchise had not been extended to women.

as possible. Throughout the greater part of the nineteenth century there were founded some of the friendly societies which were the fore-runners of the approved societies under the National Health Insurance Act, 1911. This movement had its beginnings in the later years of the eighteenth century under the auspices of better-off people, who were able for a time to prevent it from getting into the hands of the trade unions, then suspected of subversive activities. But soon there were two distinct movements, "one, mainly in the country districts, acting under patronage and in effect controlled by benevolent gentry, and another, mainly in the towns, run democratically by its own members and crystallising gradually into the great Orders of Oddfellows, Foresters, Druids and the like."¹ Membership of these friendly societies which provided, amongst other benefits, sickness pay, was confined to the better-class artisans and others of similar occupational status; but it enabled such thrifty people to insure against inevitable sickness in some member of the family and thus to employ the services of a doctor. Many of the friendly societies, including some of the smaller ones, employed doctors to attend to their members, but in most cases the remuneration of these somewhat unfortunate practitioners was very small and their occupation was little removed from being a "sweated" industry into which, apart from necessity, medical men were most reluctant to enter. The earlier part of the twentieth century was also the day of the "sixpenny doctor," who rarely examined a patient, but handed out interesting bottles of medicines and was willing to sign sickness certificates. In addition there were voluntary dispensaries and the out-patient departments of hospitals.

There was little in these various unorganised services which was of value to the health of the community, and domiciliary medicine was therefore a subject which would inevitably attract the attention of a government interested in social reform. A "State Medical Service" had been referred to in the Minority Report of the Royal Commission on the Poor Laws,² and a recommendation had been made that treatment of the sick should become the duty of the Public Health Authorities. No detailed proposals were made as to how this service should be organised or on what principles it should be administered; and when, at last, the Liberal Government in 1911 introduced a Bill to provide for health insurance on a national scale, it was found that one of its provisions was that the new service should be administered by Insurance Commissioners at the centre and by *ad hoc* insurance committees at the periphery.

¹ *Voluntary Social Services*, edited by A. F. C. Bourdillon, p. 16.

² Report of the Royal Commission on the Poor Laws, p. 1224.

Although the Bill providing for National Health Insurance was introduced into the House of Commons almost unheralded, there had been previous warnings by ministers that a measure of this kind was contemplated as a part of the Government's programme of social reform, which had been initiated by the provision of old age pensions in 1908. Thus Mr. Lloyd George, the Chancellor of the Exchequer, had referred to National Health Insurance when introducing the Old Age Pensions Bill, and again in 1909 during his Budget speech, and it was well known that he had spent some time in Germany studying a similar system in that country. Germany had had a compulsory system of national health insurance since 1883, and it appeared to have worked well. Nevertheless, in spite of these warnings and of the fact that a number of other nations had built up successful insurance schemes the Bill burst upon an astonished country like a thunder clap. In the first place it was compulsory, applying to most classes of wage-earners in receipt of less than £160 per annum. Sir Arthur Newsholme in *Medicine and the State* and *Health Problems in Organised Society*, discusses very fully the implications of the principle of compulsion in connection with the provision of social services by the State, and finally sums up by expressing the opinion that in the modern mind liberation from unfair conditions has become the social desideratum more than liberty, in the sense of communal restrictions.¹ It is, perhaps, not surprising that there was some indignation amongst certain sections of the working classes when they realised that there would be compulsory deductions from their wage-packets each week, and amongst employers when they discovered that they would have to contribute an equal sum in respect of each employee, and that this duty was to be discharged by the fixing of stamps on an insurance card. The wrath of a minority of upper-class employers, who objected to "licking stamps" on the insurance cards of their personal employees, was not taken seriously by the Government, and any opposition on the part of those who were about to become insured persons was disarmed by the eloquence of the Chancellor of the Exchequer with his famous slogan "ninepence for fourpence."

The drafting of the principles of the National Insurance Bill was largely the duty of Sir Robert Morant,² who had been transferred from the Board of Education to the Insurance Commission especially to undertake the gigantic work of initiating the new scheme and who possessed unusual qualifications for a task of exceptional difficulty and responsibility. Except for continental experience,

¹ Newsholme, Sir Arthur, *The Last Thirty Years in Public Health*, p. 110.

² Sir Robert Morant had been Secretary of the Board of Education since 1903



SIR ROBERT MORANT (1863–1920)

gained under entirely different circumstances, Morant had no precedents to guide him, and he and his colleagues had to lay down principles and establish broad lines of administration with nothing beyond their own knowledge of the organisation of medical services in this country to help them.

The administrative backbone of the Act was formed by a body termed "Insurance Commissioners" who were the central authority, charged with the duty of controlling the whole working of the scheme and endowed with extensive powers. In the first place the Insurance Commissioners were :—Sir Robert Morant, who was Chairman; Dr. (later Sir) J. Smith Whitaker, Deputy Chairman; Mr. John Bradbury, C.B., of the Treasury¹; Mr. D. J. Shackleton²; Mr. J. Lister Stead; and Miss Mona Wilson. The Deputy Chairman, Dr. J. Smith Whitaker, had been Medical Secretary of the British Medical Association since 1902, and the fact that he accepted this new office during a time of acute friction between the Government and the medical profession was a source of grave dissatisfaction to many members of the Association at that time. On the other hand, some of the more far-seeing members, including Dr. Cox, then Deputy-Secretary, fully appreciated the advantage of having at the Insurance Commission an administrator of the calibre of Smith Whitaker, who understood so well the point of view of the doctors. In fact the Council of the B.M.A. was consulted by Smith Whitaker but it left the decision to him.

Locally, administration of the Act, particularly in regard to the organisation of the "panel" system, was placed in the hands of insurance committees, each operating in the area of a county or county borough. An interesting feature of the insurance committee administration was that any Medical Officer of Health might, with the consent of his council, attend meetings of this committee and give such advice and assistance as was in his power. Insurance committees had the duty of arranging medical benefit through local practitioners; and also sickness, disablement and maternity benefit for post office contributors, *i.e.*, those who were not in any approved society.

Approved societies were those conforming to the Insurance Commissioners' requirements, and friendly societies, trade union societies, dividing societies, Holloway societies, industrial and co-operative societies, could all apply to be accepted as approved societies and take their part in the administration of the sickness, disablement and maternity benefits conferred on insured persons by the Act.

¹ Later, Lord Bradbury.

² Later, Sir David Shackleton.

The National Health Insurance Act was to come into operation on July 15th, 1912, and as it would apply to about 15,000,000 persons, much detailed work of organisation was required, including the establishment of the insurance committees in the area of each county and county borough and the acceptance of a vast number of approved societies. But long before the Act was due to come into operation, relations between the Insurance Commissioners and the British Medical Association became strained, and this period of disagreement lasted during the whole of the year 1912 and delayed the completion of the organisation of the scheme. The medical profession, as represented by the B.M.A., were somewhat reluctant to accept the degree of State control required by the National Health Insurance Act, but they finally agreed to participate in the working of the service provided that certain principles were accepted. These "cardinal principles" were as follows:—an income limit of £2 per week; free choice of doctor by patients; medical and maternity benefits to be administered by local health committees and not by friendly societies; the method of remuneration to be settled by the local health committees according to the preference of the majority of medical practitioners in the district and to be what the profession considered adequate; and the provision for adequate representation among Commissioners, health committees, etc. For many months negotiations between the profession and the Government broke down over the question of the income limit and the capitation fee; and the B.M.A. finally took the step of obtaining undertakings from a large percentage of its members that they would not accept service under the Act unless an agreement was arrived at. The Government produced figures to show that the average annual takings per member from "club" practice were about 4s. to 4s. 6d. per patient, whereas they were offering an amount which would bring the capitation fee to rather more than 7s.; but the B.M.A. held to their demand for 8s. 6d., exclusive of drugs and appliances. Towards the end of 1912 the position was beginning to be difficult for the Association's representatives who were not only facing a powerful Government, but were threatened with withdrawals from those of their own members, mainly "club" practitioners, who recognised that the terms offered by the Insurance Commissioners would give them a better standard of remuneration than they had ever had before.

Early in January, 1913, the Chancellor of the Exchequer was able to announce that nearly 10,000 doctors were willing to accept service under the Act and that this number would be sufficient to provide medical benefit to nearly the whole of the 14,000,000

persons who were by that time insured. Recognising this fact, the Association later in 1913 released their members from the pledge not to serve. By the end of that year the National Health Insurance Scheme was in full operation and the era of the great social services in this country had been ushered in. It was a gigantic scheme and it required moral and political courage of a high order to venture to propose it to a nation which had not been adequately prepared for it beforehand. Mr. Balfour speaking in the House of Commons on October 25th, 1911, said of the Bill: "This is the most complicated Bill of the last 100 years, and it touches more sets of people in more obscure and unanalysable ways than any measure which has yet been tried." Mr. Lloyd George, many years after, thus described its passage through the House of Commons :—"It was like rounding Cape Horn, a chilly wind ahead, heavy seas and dangerous rocks ready to tear our craft—the National Health Insurance Bill. However, we steered through and it is now sailing the Pacific Ocean."¹

Praise is due not only to political courage and vision on the part of the Government, but also to the administrative genius of a number of higher Civil Servants who worked night and day for many months to prepare the necessary legislation and to bring it into operation. Morant was the leader, but he had assisting him Sir Claud (now Lord) Schuster, Mr. (now Lord) Bradbury, Sir John Anderson, Sir Warren Fisher, Sir James Smith Whitaker and a number of others, equally able, who, later on, attained high office in the Civil Service. It was an exceptional occasion and, as always in our history, the need brought forth the men.

The National Health Insurance Scheme, great as were its merits, had, nevertheless, some serious defects. It only applied to wage-earners in receipt of less than £160 per annum and some, such as civil servants, local government officers and teachers, were exempted from insurance because they secured benefits from their employment at least equivalent to those obtainable from the national scheme; and it left out of account entirely the dependants of insured persons. Moreover, the medical benefit provided was that of an ordinary general practitioner service, and there was no provision for the use of consultants and specialists and—worst of all—no arrangements for hospital treatment. It was pointed out in the earlier pages of this chapter that there were grave defects in both the hospital and domiciliary medical services available for the wage-earners. The National Health Insurance Act, 1911, had provided a partial cure for the latter defect; but, strangely enough,

¹ Quoted from Sir George Newman's *The Building of a Nation's Health*, p. 391.

its framers appeared to have failed to grasp the fact that much of the more serious work in medicine was performed in hospitals and that reforms in the hospital system of this country were at least as urgent, at that time, as improvements of a not very fundamental nature in the domiciliary medical services. All the weaknesses in a system which permitted the larger part of the country's hospital accommodation to be provided under the Poor Law, were allowed to continue for nearly 20 years longer, and even then the remedy which was applied was only partial.¹

From the administrative point of view the placing of responsibility for sickness, disablement and maternity benefit, and for "additional" benefit upon approved societies of differing orders of strength and efficiency had the disadvantage that it led to differences in the amount of benefit. It appears that Mr. Lloyd George had not consulted the Local Government Board in regard to the actual preparation of the Bill, and this may be an explanation of the regrettable fact that the local authorities—unreformed as they were—were given no part in the administration of the National Health Insurance Scheme in spite of their experience of the Public Health Services. The late Sir Arthur Newsholme who, as Medical Officer of the Local Government Board, had vast experience of Public Health over a period of many years, expressed the following views on the Scheme :—"Had the National Insurance Scheme been referred to a Committee of persons expert in local administration and in public health and medical work, along with insurance representatives, it would have benefited immensely, and much extravagant expenditure might have been saved."²

Two features in the National Health Insurance Scheme from which important consequences were to flow have yet to be mentioned. They were (i) sanatorium benefit and the financial provision for building sanatoria, and (ii) the allocation of funds for medical research. As regards (i), the Act gave power to insurance committees, not only to grant insurance benefit to contributors, but to extend it to dependants; and any deficiency in regard to expenditure on this provision was to be defrayed in equal amounts by the Treasury and the councils of the appropriate counties or county boroughs. The building of sanatoria and other institutions for the treatment of tuberculosis and other diseases was to be encouraged by the grant, in the first place, of £1,500,000, to be

¹ The Local Government Act, 1929, transferred Poor Law hospitals and institutions to the control of the councils of counties and county boroughs. But they might still be administered under the Poor Law.

² Newsholme, Sir Arthur, *The Last Thirty Years in Public Health*, p. 113.

distributed by the Local Government Board with the consent of the Treasury. This provision was later of importance in connection with the establishment of a Tuberculosis Service.

Just as useful was the requirement in sec. 16 of the Act that one penny per insured person should be set aside each year for the purposes of medical research on "any disease to which insured persons are subject."

Medical Research Organisations

Although the provision of funds for medical research was limited to the small amount secured by the levy of one penny per insured person, and by the proviso that research should be limited to those diseases from which insured persons suffered, the field was, nevertheless, very wide, presenting ample scope for those members of the profession whose bent of mind was in the direction of investigation and inquiry. The Local Government Board throughout its history had not only encouraged medical research but had actively initiated it and subsidised it, following the example set by Sir John Simon and the Privy Council. Now, under the National Health Insurance Act, some of the burden was to be taken off the shoulders of the Local Government Board. But not by any means the whole of it. Much of the work done by Sir John Burdon Sanderson, Dr. (later Sir Alexander) Houston and Dr. (later Sir William) Savage¹—to mention only these out of the many investigators employed by the Board in the nineteenth and early parts of the twentieth century—related to the mode of communication of infectious disease, the

¹ The sum total of research work performed by Sir William Savage was very large, and only a comparatively brief reference can be made to it here. His principal reports are as follows:—

- (a) On the bacteriology of milk, in the Annual Reports of the Medical Officer of the Local Government Board for 1906–7, 1907–8, 1908–9.
- (b) On food poisoning and food infections, in the Annual Reports of the Medical Officer of the Local Government Board from 1906 to 1910. Special Report (No. 77) to the Local Government Board on "Bacterial Food Poisoning and Food Infections," 1913. To Medical Research Council, "Food Poisoning; a study of 100 recent outbreaks," 1925; and "An Investigation of the Salmonella Group with special reference to Food Poisoning," 1925.
- (c) On canned foods, to the Food Investigation Board, "Methods used for the Inspection of Canned Meats," 1920, and "The Bacteriology of Canned Meat and Fish," 1922, etc.

Sir William Savage has also written a number of books including:—*The Bacteriological Examination of Water Supplies*, 1908; *The Bacteriological Examination of Food and Water*, 1914; *Milk and the Public Health*, 1912; *Food Poisoning and Food Infections*, 1920; *Canned Foods in relation to Health* (Milroy Lecture), 1923; *Practical Public Health Problems*, 1941, etc.

contamination of water supplies and the pollution of food, and would still have to be continued under the same or similar auspices. The investigations performed by Burdon Sanderson and Houston have already been referred to (pp. 99 and 287). Savage was Medical Officer of Health of Somersetshire from 1909 to 1937, and it was mainly during his period of service under the county council that he conducted his well-known researches into the bacterial contamination of foodstuffs, including milk. These fundamental investigations materially advanced our knowledge in regard to the purity of food supplies and into the causation of food-borne outbreaks of epidemic disease.

The first result of the legislative recognition of the need for a research organisation as an integral part of the Health Services of the country was the formation of a special committee for this purpose under the auspices of the Joint Committee for National Health Insurance. At the outset this research committee was singularly fortunate in securing, in 1914, as its secretary Dr. (later Sir Walter) Fletcher, M.D., D.Sc., F.R.S., and it was this able medical scientist who provided much of the motive force behind the activities of the committee and, later, in its earlier years, the Medical Research Council. The Medical Research Committee, soon after its inception in 1913, commenced the practice of publishing annual reports on its work, and in the first of these (1914-5), it defined the scope of its work by saying that "the object of research is the extension of medical knowledge with the view of increasing our powers of preserving health and preventing or combating disease." Much of the work of the Committee was concentrated at the National Institute for Medical Research at Hampstead, but some part of its funds was used to subsidise research at the various universities and hospitals. Throughout its history the Medical Research Committee¹ encouraged with help and advice the medical investigator wherever he might be found.

It was, perhaps, an advantage to the reputation of British medical science that the establishment of the Medical Research Committee took place when it did. Sir Ronald Ross, K.C.B., F.R.S., made some very adverse comments about the standing of medical research in this country in his written evidence to the Departmental Committee on Tuberculosis. "I have had many opportunities," he said, "of making inquiries about the value of medical investigations in various parts of the world, and am obliged to state that British investigations in this line are not generally thought to hold a very

¹ After the close of the 1914-18 war the title of this organisation was changed to Medical Research Council (p. 424).

high place at present, except, perhaps, in the line of tropical medicine. As a measure of this I may, perhaps, mention that out of 11 Nobel Medical Prizes which have been allotted (with the greatest impartiality) since 1901, only a single one has come to British workers.”¹

Tuberculosis

With the discovery by Koch in 1882 of the organism causing the lesions of tuberculosis in man and animals, the way was open for a clearer and more scientific view to be taken of this disease and of the means available to combat it. That the community was only too anxious to find means of reducing the incidence of tuberculosis is abundantly shown by the number of Royal Commissions appointed since 1848 to consider various aspects of this problem. The appointment of a Royal Commission is not to be undertaken lightly and this method of inquiry is reserved for matters of first-class importance, deserving the most thorough, prolonged and painstaking investigation. So important was the subject of tuberculosis considered to be at this period that two Royal Commissions sat to consider it, one of which reported in 1898 and the other in 1904 and 1907. The main recommendations of the Commission which reported in 1898 were in regard to infected milk and meat and the precautions to be taken against them, and these proposals were based upon the assumption that tuberculosis in cattle could be communicated to man. As we have seen (pp. 260–3), the main part of the work of the succeeding Royal Commission was to initiate extensive researches with the object of confirming or disproving Koch’s assertion as to the non-communicability of bovine tuberculosis to man; and the results of this Commission’s investigations were to prove, beyond all doubt, that human beings could readily contract tuberculosis of bovine origin. The next step, to which the scientists attached to the Commission gave much thought, was the attempt, both in the United States and in this country, to produce herds of cattle which were free from tuberculosis, and although hopes were entertained that this object would be rapidly achieved, experience disclosed unexpected difficulties. As regards milk, the final result was that a few tuberculin-tested herds were formed, an increasing amount was pasteurised, and the remainder was sold to the consumer without any guarantee that it was not infected.

Pulmonary tuberculosis, almost entirely due to the human

¹ Final Report of the Departmental Committee on Tuberculosis, Vol. II, Appendix, p. 161.

bacillus, had a different and much more complicated history. It is a disease which has been known to man for many centuries and, indeed, it would be true to say that the history of pulmonary tuberculosis is co-existent with the history of urban civilization. Our forefathers in the nineteenth century had little idea of how to deal with it, and they were not surprised to learn that a large proportion of the chronic beds in their Poor Law infirmaries were occupied by persons suffering from tuberculosis of the lungs. Deaths from tuberculosis, including pulmonary tuberculosis, were included in the Registrar-General's statistics and mention has been made, in some of the previous chapters, of the fairly steady decline in mortality from this cause which began to show itself well before the end of the nineteenth century.

Throughout the nineteenth century tuberculosis, and especially tuberculosis of the lungs, was justly described as "the Captain of the Men of Death." The incidence of this disease was by no means wholly confined to the working classes; its ravages spread throughout the whole of society. Other diseases such as smallpox and typhoid came in what were mostly short and sharp epidemics, which were soon forgotten except by the relatives of the unfortunate victims. Tuberculosis, on the other hand, was continually present, gnawing slowly and remorselessly at the vitals of the community. The Victorians, who sometimes found it difficult to endure the sight of reality unveiled, obscured the awfulness of this disease by referring to it as "consumption" and to the victims as being "in a decline." The slow, lingering death of a consumptive girl was a common theme of poets and novelists, who invested it with a romance which was singularly absent in real life.

Although tuberculosis in man and animals was recognisable as a clinical entity throughout the greater part of the nineteenth century there was little agreement, until the discoveries of Koch, in regard to its causation and to its mode of spread. It was known, however, that certain conditions favoured the propagation of this disease. Dust in factories, overcrowding and lack of ventilation in the home, and poverty were some of the factors known to be associated with the spread of tuberculosis of the lungs. It was said of Francis Bacon by a modern historian¹ that "the cold, clear light of human reason has rarely burnt so brightly." Perhaps it would not be going too far to apply some part of this unique eulogy of an Elizabethan philosopher and lawyer to this nineteenth century bacteriologist who not only discovered the causative organisms of tuberculosis and other diseases, but whose logical mind erected in

¹ Neale, Prof. J. E., *Queen Elizabeth*, p. 331.

the postulates a beacon which has served as a guide to generations of medical scientists.

The notification of tuberculosis, even after it had been recognised as being a disease which was communicable from one person to another, was long delayed, mainly because there were no commonly accepted methods of treating it. In 1908, however, the Local Government Board decided to make a start by requiring, under the Public Health (Tuberculosis) Regulations of that year, the compulsory notification to the Medical Officer of Health of cases of pulmonary tuberculosis under the care of Poor Law medical officers. These Regulations came into operation on January 1st, 1909, and they facilitated the admission of persons suffering from this disease to Poor Law institutions. Under the Public Health (Tuberculosis in Hospitals) Regulations, 1911, all cases of pulmonary tuberculosis occurring in the practice of hospitals, including dispensaries and similar institutions, became notifiable from May 1st, 1911 ; and under the Public Health (Tuberculosis) Regulations, 1911, all cases of this disease under medical care became notifiable. Finally, the Public Health (Tuberculosis) Regulations, 1912, made all forms of tuberculosis notifiable.¹

By the year 1912, therefore, the Medical Officer of Health in each area possessed the means of knowing substantially all cases of tuberculosis serious enough to require the services of a doctor, but throughout the country generally, apart from voluntary and Poor Law Hospitals, there was little special provision available for the treatment of this disease. This is true as a general statement, but there were exceptions to it. In a few places tuberculosis schemes, on a voluntary basis, had been established, notably in Edinburgh by Dr. (later Sir Robert) Philip (1857–1939) and in Oxfordshire by the Oxfordshire Association for the Prevention of Tuberculosis. The Edinburgh scheme was initiated by the opening of a tuberculosis dispensary in 1887 by Philip ; and in 1894 the institution at Craigmyle House, which was to develop into the Royal Victoria Hospital Farm Colony, was founded. In this country the Oxford Dispensary Scheme was operated under the aegis of the Oxfordshire Association and was established in 1910, a tuberculosis officer having been appointed in the same year. The dispensary consisted of a special tuberculosis out-patient department of the General Hospital. There were no sanatorium beds available, but patients with pulmonary tuberculosis were admitted to 18 open-air balcony beds in the Hospital.

¹ These Regulations were made under powers contained in the Public Health Act, 1875, the Public Health (London) Act, 1891, and the Public Health Act, 1896.

Sheffield, where compulsory notification of tuberculosis had been in force since 1903, had evolved a fairly complete dispensary system by 1911, and evidence about it was given to the Departmental Committee on Tuberculosis. Apart from the dispensary, there was a special out-patient department for tuberculosis at the Royal Hospital, and 20 male and 20 female beds were available at the City Hospital for Consumption. An open-air school was included in the scheme, and sputum examinations were done at the University Bacteriological Department.

The position in regard to the diagnosis and treatment of tuberculosis in the year 1912, when compulsory notification of all forms of this disease was commenced, was that there were a few voluntary sanatoria, such as the Royal Sea Bathing Hospital, Margate, and the Royal National Hospital, Ventnor, and a small number of dispensary schemes of differing degrees of efficiency. These various arrangements only covered a small fraction of the needs of persons suffering from tuberculosis, and in most places there was no provision for the treatment of this disease except beds in voluntary and Poor Law hospitals. The advantage derived from these varied experiments conducted by voluntary societies and local authorities was that they provided the basis of experience upon which a national scheme could be founded. By the end of 1911, the need for an inquiry into the best methods of organising a tuberculosis service was becoming urgent, in view of the recent passing of the National Health Insurance Act with its promise of funds for the erection of sanatoria and other institutions for the treatment of tuberculosis. On February 22nd, 1912, the names of those appointed to serve on the Departmental Committee on Tuberculosis were announced. The Chairman was to be Mr. Waldorf Astor, M.P., and amongst the members were Drs. Christopher Addison, M.P.,¹ N. D. Bardswell, A. Mearns Fraser (Medical Officer of Health of Portsmouth), Arthur Newsholme (Medical Officer of the Local Government Board), Marcus Paterson, R. W. Philip, Jane Walker, J. Smith Whitaker and Sir George Newman (Chief Medical Officer of the Board of Education). Some of these names, such as those of N. D. Bardswell, Marcus Paterson, Sir R. W. Philip and Jane Walker, became famous in the history of tuberculosis in this country. Later Mr. Arthur Henderson, M.P., was appointed a member of the Committee.

The terms of reference of the Departmental Committee were to report upon the considerations of general policy in respect of the

¹ Later, Lord Addison.

problem of tuberculosis in the United Kingdom, in its preventive, curative and other aspects, which should guide the Government and local bodies in making or aiding provision for the treatment of tuberculosis in sanatoria or other institutions or in other ways. As the problem was urgent, since the National Health Insurance Act was due to come into operation on July 15th, 1912, the Committee issued an Interim Report within a few months, and this contained its main administrative recommendations for the organisation of the new Tuberculosis Service. The principal recommendation was that schemes dealing with the whole population should be drawn up by the councils of counties and county boroughs, or by combinations of these bodies. Such schemes would include the provision of tuberculosis dispensaries which would act as receiving houses and centres of diagnosis, clearing houses and centres for observation, centres for curative treatment, for the examination of "contacts," for after-care and for the dissemination of information and education. An adequate number of sanatorium beds was, in the Astor Committee's opinion, essential, and some advice is given in the Interim report on the subject of their construction and staffing. This question was more fully discussed in the Departmental Committee's Final report, published in 1913. The Committee's recommendations in regard to the erection and administration of sanatoria were based upon a memorandum prepared by Drs. Bardswell, Arthur Latham, Marcus Paterson, R. W. Philip and Jane Walker; and in addition, much valuable advice on this subject, based upon considerable experience, was given in the note submitted by Dr. (later Sir Henry) Gauvain, the Medical Superintendent of the Lord Mayor Treloar Cripples' Hospital and College, Alton. The Society of Medical Officers of Health, in a comprehensive memorandum, besides stressing the great value of early diagnosis, advocated the provision of institutions for (*a*) early cases in which there was a reasonable prospect of a lasting cure, (*b*) cases of established disease in which the prospect of cure was not hopeful, (*c*) advanced cases in which there was no hope of cure, and (*d*) the education of children of school age who were either tuberculous or threatened to become so.¹

Progress in the Organisation of Tuberculosis Schemes

No new legislation was required for the purpose of putting into force the recommendations of the Astor Committee, or such

¹ Final Report of the Departmental Committee on Tuberculosis, Vol. II, Appendix, p. 163.

modifications of them as might be considered desirable by the Local Government Board. The Public Health Act, 1875, and the Isolation Hospitals Acts of 1893 and 1901 afforded sufficient powers, in the opinion of the Government's legal advisers, to establish the Tuberculosis Service on the lines of the Astor report. Notification, that essential preliminary to dealing effectively with any infectious disease—and tuberculosis was properly regarded as an infectious disease—was already required under the Public Health (Tuberculosis) Regulations, 1912. The financial needs of the new service would be supplied partly from Government grants and partly from the resources of local authorities. Under the Finance Act, 1911, a sum of £1,500,000 became available for the erection or provision of institutions for treating patients suffering from tuberculosis, and the costs of running approved tuberculosis schemes were to be met as to 50 per cent. by the Exchequer, and 50 per cent. by the local authorities. Money was also available in respect of insured persons, and in certain circumstances, their dependents, under the National Health Insurance Act.

The Local Government Board lost no time in signifying to the major local authorities their general approval of the recommendations of the interim report of the Astor Committee.¹ In order to deal expeditiously with the consideration of tuberculosis schemes submitted for approval by counties and county boroughs, the Board allocated to this work Dr. F. J. H. Coutts and Dr. J. E. Chapman of the Medical Department; and it was suggested in the official circular that each authority should ask its Medical Officer of Health to submit particulars of the facilities available for the treatment of all forms of tuberculosis and to formulate, for the authority's consideration, proposals for administrative action.

At that time many local authorities had made recent appointments to the post of tuberculosis officer and little trouble was experienced in finding reasonably satisfactory accommodation for the establishment of tuberculosis dispensaries. There was, however, some difficulty at the outset in securing a sufficient number of tuberculosis officers with the necessary experience, but this was gradually overcome as more and more sanatoria were opened and further opportunities for gaining the necessary qualifications provided. The institutions available in 1913, for the treatment of patients suffering from tuberculosis were of several kinds—privately owned sanatoria, sanatoria belonging to voluntary bodies and local authorities, and various types of hospitals; but until an adequate building programme could be completed there was a very

¹ Circular of May 14th, 1912.

considerable overall shortage of accommodation. Largely because of the war, this shortage of tuberculosis accommodation lasted for many years.

It may be desirable at this stage to describe some of the preliminary work done in connection with tuberculosis by certain of the larger towns. Manchester, under the able guidance of Dr. James Niven, adopted a voluntary system for the notification of phthisis in September, 1899, but this at first only applied to cases in public institutions, and it was not until the following year that the option of notification was extended to all medical practitioners. This system gave the Public Health Department valuable information about the incidence of this disease in the various parts of the City; but there were very few beds available for treatment.

In 1905 the Crossley Sanatorium was opened and this rendered 20 beds available for the Manchester Scheme with, of course, further accommodation at various workhouse hospitals. When compulsory notification came into force in 1912, the Corporation adapted part of the Consumption Hospital for use as a tuberculosis dispensary for the patients so notified, and, by that time, possessed beds at the Crossley Sanatorium and at Abergele, and also at Baguley, previously a fever hospital, to which extensions were made. The Medical Superintendents at Baguley were, successively, Dr. H. S. Lister, Dr. W. H. Smith, and Dr. R. C. Hutchinson. Dr. H. G. Trayer, the present Medical Superintendent was appointed in 1921.¹ Dr. D. P. Sutherland was appointed in 1912 to take charge of the Tuberculosis Department.

Liverpool has had an unfortunate history in regard to pulmonary tuberculosis, and for nearly 150 years it has exemplified the close association that exists between this disease and poverty and overcrowding. The high incidence of tuberculosis in the borough had been commented upon by many observers—by Duncan, Parkes and Burdon-Sanderson, and others. Parkes and Sanderson emphasise again and again the poverty, overcrowding, filth and intemperance to be found in the poorer quarters of Liverpool. “In spite of this enforced cleaning,” they say, “nothing could exceed the dirt of the people and the fœtid condition of the atmosphere at night. How human beings could tolerate such a state of things would be incredible, if we did not know the deadening influence of custom.”² In the “phthisis map” 1911, published in the Annual Report of the Medical Officer of the Local Government Board, 1912–3,

¹ Niven, James, *History of Public Health Effort in Manchester*, 1923, pp. 117–8.

² Prof. E. A. Parkes and Prof. J. Burdon-Sanderson, *Report on the Sanitary Condition of Liverpool*, 1871, p. 64.

Liverpool headed the list of male phthisis and was second only to Swansea for female phthisis. Under the Liverpool Improvement Act, 1867, authority was obtained to license premises in which cows were kept and from which milk was sold, and the Contagious Diseases (Animals) Act, 1878, added further to these powers.¹ Liverpool was one of the early towns to bring into force a system of voluntary notification of tuberculosis—in 1901; and, in advance of the general scheme for the country, it provided 25 sanatorium beds at Fazakerley, soon increased to 80. In 1911, 200 beds were made available at a temporary hospital erected at Parkhill. After 1914, the Fazakerley Sanatorium was increased in size to 200 beds, and use was made of the Sanatorium at Frodsham and the Leasowe Hospital for Children. Three Tuberculosis Clinics were opened in 1912.²

In Coventry there had been a system of voluntary notification of pulmonary tuberculosis since 1907, and in 1909 the Council leased six beds at the Winsley Sanatorium, near Bath. From 1911 onwards the Sanitary Committee were engaged in considering schemes for the building of a sanatorium nearer to the City, but early in 1913, it was decided that the most satisfactory method of providing accommodation for patients in the area suffering from tuberculosis would be to co-operate with the Warwickshire County Council in a joint building scheme. On March 30th, 1914, an Order was made by the Local Government Board constituting the Warwickshire and Coventry Joint Committee for Tuberculosis. In 1913 the Council established a tuberculosis dispensary at the discharge block of the City Hospital, Dr. Kenderdine being appointed Medical Officer.³

The National Association for the Prevention of Tuberculosis, founded in 1898, exists for the purpose of educating public opinion in the means of preventing this disease. It encourages the formation of voluntary tuberculosis care committees and until 1943 managed the Burrow Hill Sanatorium Colony at Frimley.

Schemes of Social Insurance

The schemes described in the preceding sections of this chapter were all concerned with the medical needs of the community. Individuals, and in particular those employed in industry have, however, many other needs of a social character; and it was the

¹ Hope, E. W., *Health at the Gateway*, p. 72.

² *Ibid.*, p. 75.

³ Annual Reports on the Health of Coventry (Dr. E. H. Snell), 1911, 1912 and 1913.

purpose of legislation introduced in the first quarter of the twentieth century to provide for the workers some measure of help in connection with the inevitable misfortunes or mischances of life, arising from such well-defined causes as accident, old age or unemployment. Accident was the first of the possible mischances in the life of the worker in industry to be dealt with, and although the main lines of progress in this subject took place in the first ten years of the twentieth century, the foundations of the scheme for the compensation of workers injured during the course of their employment were laid down as early as 1897. The Workmen's (Compensation for Accidents) Act, 1897, is, indeed, a famous piece of legislation because it heralded the recognition by society of a very ancient wrong under which many generations of workers had suffered—that, if seriously injured during the course of their employment, they were thrown on to the scrapheap without resources and without help, except that given by the Poor Law, to fend for themselves and their families as best they might. The Workmen's Compensation Act only made provision for compensation in respect of death or incapacity in the case of certain specially dangerous industries such as railways, mines, quarries, building operations and structural engineering. This legislation proved beneficial, and in 1900 agriculture was added to the list of scheduled industries. The Workmen's Compensation Act, 1906, extended the scheme to cover practically every case in which two persons stood together in the relation of master and servant. One of the most important features of the 1906 Act was that it provided compensation in respect of scheduled industrial diseases.

Although the main purpose of the National Health Insurance Act, 1911, was, as we have seen, the organisation of a scheme of general practitioner treatment, it contained the important additional provision of insurance against unemployment in a limited number of industries. This scheme came into operation in July, 1912, and it applied to certain industries in which marked fluctuations in employment were prone to occur, such as building, mechanical engineering, iron founding, etc. In the early stages unemployment insurance covered about $2\frac{1}{4}$ million workers, and in 1916 an extension took place which added a further $1\frac{1}{2}$ million. The Unemployment Insurance Act, 1920, was much more comprehensive, embracing a total of 11 million workers and covering not only manual labour but also those engaged in non-manual occupations whose remuneration was not more than £250 per annum.

Two other extensions of social insurance or assistance made during this period may be mentioned, namely, the Widows',

Orphans' and Old Age Contributory Pensions Act, 1925, and the Blind Persons Act, 1920. The Act of 1925 provided benefits to the dependents of insured workers; while the Blind Persons Act laid upon the councils of counties and county boroughs the responsibility for making arrangements for promoting the welfare of the blind in their areas. Under this Act a non-contributory old age pension became payable to blind persons at the age of 50.¹

¹ The age for the award of an old age pension in the case of blind persons was reduced to 40 in 1938.

CHAPTER 2

DEVELOPMENTS IN THE SERVICES CARING FOR THE MOTHER AND THE CHILD

In Part III, chap. 1, an account is given of the various steps which led to the founding of the School Medical Service and to the beginnings of an organised system for the care of the mother and the young child. The School Medical Service was based upon an Act of Parliament—the Education (Administrative Provisions) Act, 1907—and the framework within which it was to operate was laid down in the Act with some precision. This administrative framework included the organisation of a Medical Department at the Board of Education under Sir George Newman, assisted by Dr. Alfred Eichholz, Dr. Janet M. Campbell and Dr. Ralph Crowley; and it became the duty of this Department to stimulate and encourage the local education authorities¹ to proceed with their arrangements for the medical inspection of children attending elementary schools as rapidly as possible. Much of the credit for this clear-cut scheme for the medical inspection of school children, and for the successes which it rapidly attained, must go to Sir Robert Morant², who was then—and until 1911—the Permanent Secretary of the Board of Education.

The organisation of the new Maternity and Child Welfare Service was much less definite and precise, and instead of this Service emerging at some particular point in time as a fully organised scheme, as did the School Medical Service, it was allowed by the Local Government Board to develop in a somewhat haphazard manner in accordance with the standards of public spirit and enlightenment displayed by individual local authorities. Some local authorities developed the organisation of milk centres and child welfare clinics in a most enterprising and satisfactory manner while others, despite encouragement from officers of the Local Government Board, made the minimum provision. The amount of initiative and energy displayed by voluntary societies varied to a similar extent throughout the country, but some made successful attempts to fill the gaps in the service left by the local authorities. It was, of course, an easier administrative problem to organise

¹ The Education Act, 1902, had abolished the School Boards and transferred their duties to local education authorities.

² For an assessment of Sir Robert Morant's work at the Board of Education and at the Insurance Commission, see Chap. XIV in Newman's *The Building of a Nation's Health*.

the School Medical Service than to provide arrangements for the care of the young child. The boy or girl at school was under the supervision of the local education authority for so many days during the year, and, being present and available, he (or she) could be medically inspected if the parents did not actively object—and they seldom did. On the other hand, the young babies scattered throughout the homes in the area, had to be visited and the mothers persuaded to bring them to a child welfare clinic; and this meant the long and slow process of the education of parents and the creation of public opinion in favour of this particular method of looking after the health of children in the first year or two of their lives. Progress was therefore slow, but it owed much to the devoted labours of the first-appointed health visitors who, often untrained and inexperienced, began the uphill task of educating the mothers of this country in the proper methods of the care of their infants. These pioneer health visitors had to fight against prejudice, harmful superstition and centuries-old tradition, and to combat the inertia and apathy of the working-class mother of those days, oftentimes burdened with the care of a large family.

Progress in the Organisation of the School Medical Service between 1907 and 1914

A full account of the medical inspection arrangements required by the Board to be made by local education authorities is contained in the Annual Report for 1912 of the Chief Medical Officer. The new service had been in operation since January 1st, 1908¹, and by 1912, it had already developed very far. A fundamental requirement of the Code of Regulations for Public Elementary Schools was that arrangements should be made for the medical inspection of all children admitted to each school in any year and any expected to leave school during the year. These two groups are called “entrants” and “leavers”; and up to the year 1912 they were the only children in elementary schools who were medically inspected as a matter of routine by the School Medical staff. But, in addition to the two routine groups, the medical officers in most areas examined other children referred to them by the teachers at the time of their visits to the schools.

The medical examination was conducted in accordance with a schedule; and most local education authorities made arrangements for the presence of a parent or guardian while the inspection was taking place. Although the Act only rendered medical inspection

¹ The date upon which the Education (Administrative Provisions) Act, 1907, came into force.

compulsory in public elementary schools, a number of education authorities, realising the great value of a medical examination to the child, had made arrangements on a voluntary basis for their school medical officers to attend secondary schools and by 1912 about one-eighth of all such schools upon which grant was paid had accepted this provision.

Five years' experience of the working of the School Medical Service throughout this country had provided a vast amount of information, never available before, about the physical condition of several millions of children between the ages of 5 and 14, and the necessary knowledge was being accumulated upon which to base further improvements and extensions in the care of pupils attending schools for which the Board of Education and the local authorities were responsible. Moreover, certain important principles were being established. It was recognised, at an early stage, that here was an unexampled opportunity for the medical profession to study the *beginnings of disease* in children and the progress of the stages from incipient morbid conditions to fully matured disease; and, having succeeded in recognising the early manifestations of disease, to take such measures as were available to apply remedies. This, as the School Medical Service fully understood, was true Preventive Medicine. But, more than this, the Service soon began to appreciate the fact that there were many morbid conditions in the children coming under their care which, unless dealt with, would lead to partial or complete incapacity in later life. These conditions, such as heart disease, rheumatism, tuberculosis, rickets, and all degrees of malnutrition, were often, during the early years of life, completely or partially remediable, whereas if they were left untreated they might sooner or later lead to grave disability.

Abnormal physical and mental conditions were, indeed, almost endless in their diversity. One of the commonest, then as well as now, was defective vision and the Chief Medical Officer stresses the importance of the accurate diagnosis of this condition and suggests that local education authorities should give consideration to the desirability of making arrangements for the use of the services of ophthalmic consultants to assist the examining medical officer in doubtful cases. It is evident that the School Medical Officers were paying special attention to children's eyesight and much information about the visual condition of the younger members of the population was being accumulated. Mr. N. Bishop Harman, acting for the L.C.C., reported that in 1912 all errors of refraction could be divided into the two main groups, hypermetropia, of which there was in that year 66 per cent., and myopia, 34 per cent. Arising

out of the consideration of defects of vision in school children there came the question of the size of type to be used in educational books and the proper lighting of classrooms—two subjects to which much attention was paid by the Board of Education and the local education authorities during the next few years.

Discussing the incidence of tuberculosis in school children and quoting figures supplied by Dr. T. H. C. Stevenson, the Superintendent of Statistics at the Registrar-General's Office, the Report mentions that the death rate from all forms of tuberculosis among children (under 15 years of age) was greatest during the first five years of life, lowest between the ages of 5 and 10 years, increasing during the remaining age periods. There was at that time no organised tuberculosis service and the tendency among School Medical Officers was to rely for the diagnosis of pulmonary tuberculosis in children upon symptoms and physical signs. Tuberculin was seldom used and X-rays had not at that time attained the significance in the diagnosis of this disease which they have reached during the last 25 years. Many School Medical Officers were beginning to become aware that the diagnosis of pulmonary tuberculosis in the case of children under the age of 14 was strewn with pitfalls, and many adopted an "expectant" policy, frequently re-examining and following-up. The Board did not regard it as necessary to exclude from school attendance any children said to be suffering from this disease who were non-infective. Unfortunately there was as yet comparatively little provision for children with tuberculosis, but the number of sanatoria possessing beds for this purpose was slowly increasing. Some, such as the Lord Mayor Treloar Cripples' Hospital at Alton, the Royal Liverpool Country Hospital at Heswall and the West Kirby School for Physically Defective Children, were established with the object of providing accommodation for children suffering mainly from surgical tuberculosis, and educational facilities were, of course, provided. The need for a substantial increase in the number of beds for children suffering from all forms of tuberculosis was stressed by the Departmental Committee on this subject (p. 316).

It was realised that the main causal factors associated with diseases of the heart in school children were acute rheumatism, scarlet fever and diphtheria—acute rheumatism being easily first. The Chief Medical Officer comments on the importance of accuracy in diagnosis, since the opinion of the examining doctor might have considerable influence on the after-history of the child. The views of Dr. (later Sir James) Mackenzie were at this time beginning to exercise a considerable influence on the medical profession, and it

was recognised by many School Medical Officers that a heart murmur did not necessarily indicate heart disease. Preventive measures in connection with "growing pains," chorea and sore throats were advised as being of great importance.

Treatment.—Under the Education (Administrative Provisions) Act, 1907, the duty of medical inspection fell upon the local authority, and the responsibility for the treatment of the defects found was placed upon the parent. But this, although an accurate statement of the position at that period, did not much help the harassed School Medical Officer who repeatedly re-inspected children who had had no treatment for their defects, in spite of advice to consult private doctors, district medical officers, or voluntary agencies. The position in regard to treatment became so unsatisfactory that in 1912 the Board of Education issued Regulations making grants in aid of the expenditure of local authorities on the provision of medical treatment and undertakings ancillary to medical treatment. This permission to provide treatment was, at first, limited to minor ailments, uncleanliness, ringworm and other common skin diseases of children, defective eyesight or hearing, some external affections of the eyes or ears, and various temporary conditions of the mouth (including teeth), nose and throat.

The Chief Medical Officer's Report for 1912 refers to the following methods used by local education authorities under Section 13 of the Administrative Provisions Act, 1907 :—

Employment of School Nurses.

Systematic provision of spectacles.

Organised treatment of ringworm.

Contributions from authorities to hospitals.

Establishment of school clinics for certain diseases.

Establishment of dental clinics.

Some details may be given of two of these, namely, the provision of spectacles and the establishment of dental clinics. The Board soon agreed to approve of expenditure by local education authorities on the provision of suitable and inexpensive spectacles free of charge, and many such authorities applied for the necessary sanction. The estimated expenditure for this purpose in the year 1912–3 was £1,445. The average cost of spectacles was stated to be from 1s. 9d. to 3s. 6d. a pair.

Dental inspection and treatment have developed to such an extent since 1912 that it may be of interest to make reference to the beginnings of this important part of the School Medical Service. The principles on which it was based were essentially sound. "But if permanent results are to be expected as the result of the

appointment of school dentists, it should be clearly understood that the work must be undertaken on the lines of a well-organised plan, the first condition of which is that the scheme should be laid on a *preventive* basis." "In short, school dentistry must be conservative and constructive rather than palliative."¹ The School Dental Service, with some backsliding, evolved continuously on these lines. At the start, attention was concentrated upon the group of children from 6–8 years of age and, as the service developed, additional groups were added.

Special Schools for Blind, Deaf and Mentally and Physically Defective Children.—By July 31st, 1913, there were 355 schools certified under the Elementary Education (Blind and Deaf Children) Act, 1893, and the Elementary Education (Defective and Epileptic Children) Act, 1899 (p. 255). There were in 1912 40 schools for the blind, providing accommodation for 2,405 children, and this number was being added to each year. As regards adults, provision for the blind included 53 workshops, 21 homes and 65 blind aid societies. In general, provision for the employment of the blind was unsatisfactory throughout the country, although conditions in this respect were good in a few towns such as Birmingham, Liverpool, Bradford, York and Sheffield.

A most important step towards the care and education of the mentally retarded child was taken in 1913, when the Mental Deficiency Act was passed. This Act applied to mental defectives of all ages, but we are in this chapter only concerned with those over the age of 7, but under the age of 16, for whom the local education committee was, in some part, responsible. Its primary responsibility was, through its officers, to ascertain which of the children in its area, between the ages of 7 and 16, suffered from any of the degrees of mental defect, namely, feeble-mindedness, imbecility or idiocy. Children who were idiots or imbeciles were, under the Act, defined as ineducable and the duty of the local education committee towards them ended with their notification to the Mental Deficiency Act Committee of the local authority. Those children who are feeble-minded, are to some extent educable, and it has been the policy of the Board of Education to encourage local authorities to organise special schools where courses of instruction and training, adapted to the standard of intelligence of these children, are held. By July 31st, 1913, under the provisions of the Elementary Education (Defective and Epileptic Children) Act, 1899, local authorities had opened 177 certified schools for mentally defective

¹ Annual Report of the Chief Medical Officer of the Board of Education, 1912, p. 187.

children. The instruction given in special schools differs widely from that given in public elementary schools especially in the much greater emphasis placed upon physical education, hygiene and manual work. From the purely educational point of view the Board's policy has been to encourage sense training, speech training and learning by doing. Later, when boys are over the age of 14, particular emphasis is placed upon the various kinds of handwork as leading up to the occupation which they will take up when they leave the school at 16 years of age.

The last subject which requires mention in this section is that of open-air education. Fundamentals of open-air education, as laid down by the Board in 1912, were fresh air and sunlight, a sufficient diet, daily rest, satisfactory personal hygiene, medical treatment where necessary and the use of special educational methods. Children selected by the School Medical Service for attendance for a period at open-air schools were to be those who were debilitated, anæmic or under-nourished.

It will be seen from this account of the responsibilities and duties of the School Medical Service, as laid down by the Chief Medical Officer in 1912, that it had already progressed very far since its foundation at the beginning of the year 1908. But development was very uneven as between various local educational authorities. Few at that time had established all the medical services required as a minimum by the Board of Education, and still fewer had fully developed any one of these services to cover the reasonable needs in that respect of all the children in the area. Provision of special schools for physically and mentally defective children was destined to fall below minimum needs in most areas for many years; and the same kind of deficiency showed itself in the School Dental Service, which was singularly slow in its development. A great part of the reason for the retarded progress of the School Medical Service during the second decade of the century lay, however, in events which happened between 1914 and 1918—and these were beyond the control of the Board of Education and the local education authorities.

The Development of Child Welfare

In Part III, chap 1, an account has been given of the early days of the movement for the care of the mother and the young child and the part played in it by the Medical Department of the Local Government Board, the local authorities and voluntary societies. There was a new spirit of humanitarianism abroad in the earlier years of the twentieth century which was much more practical than

similar movements at other periods. It was beginning to be recognised that the children were the human capital of the nation, than whom nothing was more valuable or more deserving of all the care it was possible to bestow. There were signs in the steadily declining birth rate that children in the early future would become a scarcer commodity. If it seemed impossible to control the decline in the birth rate, society might, nevertheless, be successful in rearing to maturity a larger proportion of those already born. The campaign for the reduction of infantile mortality was therefore not only influenced by a spirit of humanitarianism, but was also a response to a vital national need. In this campaign, many, great and small, played a part. Mr. John Burns, then President of the Local Government Board, who had himself in his younger days seen the evils of excessive child mortality, was one of the most important leaders of public opinion in this movement. One of the landmarks in the history of the Maternity and Child Welfare Service was the first National Conference on Infantile Mortality held in London in 1906, at which Mr. Burns presided. His speech on that occasion aroused public opinion and paved the way for the remarkable developments in the care of the mother and the infant which took place during the next few years.¹ The central direction of the new service was in the capable hands of Sir Arthur Newsholme, the Medical Officer of the Local Government Board from 1908 onwards, and his three reports on child mortality, issued during the first few years after he was appointed, proved an effective stimulus to action. In the first of these reports, issued in 1910, Newsholme analysed the geographical distribution of infantile mortality throughout England and Wales in the year 1908, and showed how enormous were the variations as between one area and another not only in the number of deaths under one year, but also under one month. The inference from the statistics was plain—that if Oxford, for example, had a favourable rate and Liverpool or Hull one nearly twice as high, there were defects in the environments of the infants in the higher-rated places which human ingenuity could rectify, if it took appropriate measures to do so. The object of the Child Welfare Service was to rectify, as far as possible, the defects in the total environment of the child. In Newsholme's second report there appeared an analysis of the infant and child mortality in 241 urban areas in England and Wales in 1911, and this indicated that the highest rates occurred in the chief centres of industry such as the North of England, the Midlands and South

¹ This speech is printed in full in Dr. G. F. McCleary's *Early History of the Infant Welfare Movement*.

Wales. The improvements in infant and child mortality occurring at that period were, in his opinion, due to a number of factors including improved sanitary and housing conditions, more efficient municipal and domestic cleanliness, increased sobriety of the population, as well as the great efforts concentrated on child welfare work. Further analyses of infantile mortalities, in this case in Lancashire, were given in the third report, issued in 1914.¹

But while these reports disclosed the full extent of the problem of infantile mortality, they gave to the country a clear indication that the solution was not simple and must be looked for in the synthesis of a number of elements, of which the most important was the home and all of which that was composed. The home was

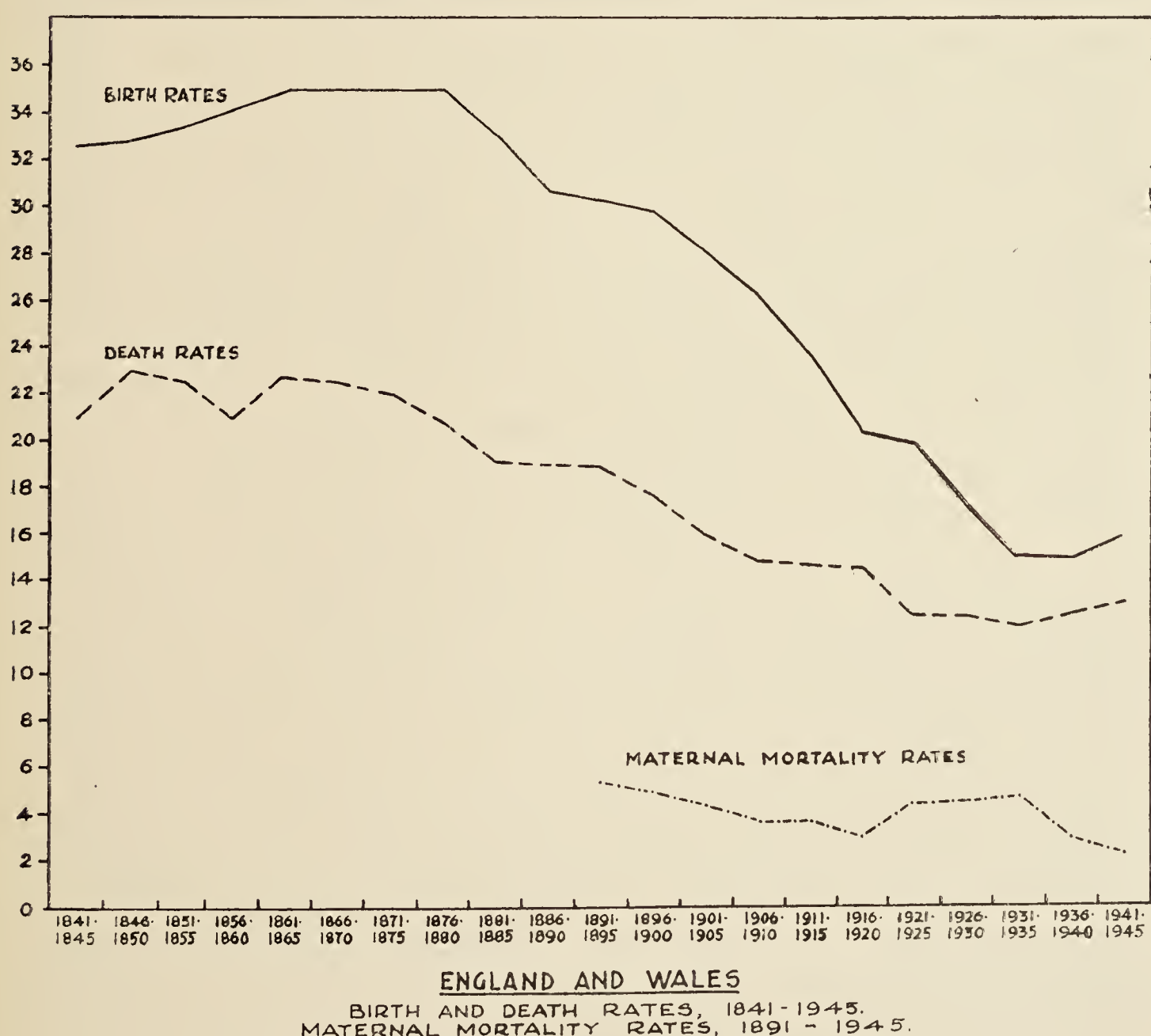


FIG. 5

¹ Newsholme, Sir Arthur, *The Last Thirty Years in Public Health*, p. 182. These reports, based upon extensive surveys, were published as supplements to the Annual Reports of the Medical Officer of the Local Government Board in 1910, 1913 and 1914. A further report dealing with mortality in connection with childbearing, and its relation to infant mortality was published in 1915.

for the first few months of life the total environment of the infant, and in that environment the mother was the all-important factor. It is not surprising, therefore, that Mr. John Burns in his address to the National Conference on Infantile Mortality in 1906, adjured his hearers and the wider audience which read his words in the papers to "glorify, dignify, and purify motherhood by every means in our power." These words, if they were not to become a mere sentiment, meant that the standards of motherhood must be elevated by the provision of a living wage and good housing accommodation, and by the education of girls not only on general lines but in the specific requirements of home-making and mothercraft. The Child Welfare Service was endeavouring to educate the mother in the proper methods of managing her infants and young children, but it was commencing late to do something which should have had its origins in the schools.

During the period from 1907 to the outbreak of war in 1914, the Child Welfare Service progressed in all areas and many additional clinics were opened and further health visitors appointed. Visits of health visitors to the homes of the people were not only of value in connection with the young child, but they had a marked educative influence on the mother and tended to elevate the standards of the home. Breast-feeding was strongly encouraged, but in the cases where this was not possible the local authorities' milk centres, many of which made up special feeds, were of great value.

Much attention was being paid to the eyes of newly-born children in an attempt to reduce the amount of blindness due to infection from gonorrhœa. In the reports of Medical Officers of Health at this period there appear suggestions to midwives to treat the eyes of all newly-born infants with protargol or other similar solutions. It was already a rule of the Central Midwives Board that midwives should call in a doctor to infants with any inflammation of the eyes, however slight. In 1914 the Local Government Board issued the Public Health (Ophthalmia Neonatorum) Regulations, which obliged either doctors or midwives to notify to the Medical Officer of Health any cases of ophthalmia neonatorum occurring in their practice. This disease was defined as "any purulent discharge from the eyes of an infant commencing within 21 days from the date of its birth." Many local authorities made excellent arrangements for the treatment of infants suffering from serious inflammation of the eyes, and, as a result of the provision made throughout the country at this time, the incidence of blindness in young children greatly declined.

The most important of the diseases from which babies and young

children up to the age of about two years died was diarrhœa, the infection being generally carried from manure heaps and piles of refuse by flies. It was Professor Newstead of Liverpool who was largely responsible for showing that the great majority of house flies (in those days) were bred in horse-stable manure.¹ An appreciation of the danger of the prevalence of flies in houses where there are young children, and action in the direction of the removal of manure heaps and other similar breeding places, have done much to reduce the number of deaths arising from this disease.

Epidemic diarrhœa was, in fact, a most serious scourge in many of the industrial areas and every year it levied a heavy toll upon infant life. It occurred during the hot summer months, and the death rate amongst infants due to this cause was greatest in the insanitary parts of the larger towns. There were many theories about the origins of this disease and it occupied a prominent place in the reports of the Medical Officer of the Local Government Board² and of the Medical Officers of Health of the industrial towns in the North and Midlands. Some observers thought that the disease was directly due to the high summer temperature, others ascribed it to improper feeding, and others again to a contaminated condition of the soil. Dr. James Niven, the able Medical Officer of Health of Manchester, regarded flies as the vehicle for the conveyance of the infection causing this disease, and his theories on this subject, which connected the degree of the prevalence of flies with the number of deaths from infantile diarrhœa, had at least the merit that they explained all the known facts.

Sheridan Delépine of Manchester emphasised the importance of the faecal contamination of milk at the farm, and this was one explanation of the fact that the incidence of diarrhœa was very much greater in bottle-fed than in breast-fed babies. In the discussions on this subject, which went on for many years, the comparative statistics as between various towns were collected and

¹ Newstead, R. (1917), *Report on habits, life-cycle and breeding places of the house-fly in Liverpool and the means of checking its increase*. Printed by the Liverpool Health Committee.

² There is a long reference to this disease, based upon observations made by Dr. Greenhow, in Simon's Annual Report for 1859. Perhaps the most detailed of the earlier accounts is that by Dr. Ballard, published in 1889 under the title *Causation of the Annual Mortality from Diarrhœa which is observed principally in the summer season of the year*. It is to Ballard that we owe the observation, well known to the older generation of Public Health officers, that summer diarrhœa does not commence until the temperature of the earth, as recorded by the four-foot earth thermometer, has reached or exceeded 56° F. Ballard before his transfer to the service of the Crown, was Medical Officer of Health of Islington. He was one of the forty-seven Medical Officers of Health appointed in 1856 after the passage of the Metropolis Management Act.

quoted. Perhaps the most significant statistical comparison was that between Leicester and Nottingham. In the ninth decade of last century the rates of infantile mortality from diarrhœa in these two towns were equal; but as the years went by, Nottingham retained most of its pail closets while Leicester replaced them with water closets. Either *post hoc* or *propter hoc* Leicester's mortality rate amongst infants declined to about half by the earlier years of the present century, while that of Nottingham remained substantially the same.

Although the specific organism of infantile diarrhœa—if such there be—has never been isolated, the influence of the common house fly (*Musca domestica*) in propagating intestinal diseases by the mechanical conveyance of infection from the infecting object to food, has long been suspected, and evidence on this point was given by Sedgewick in 1892 and by Chapin¹ and Gorham in 1899. The two-last named investigators poured cultures of *Chr. prodigiosum* down the privy-vault of a house and recovered the organism from agar plates exposed in the fly-infested pantry.² This was at least a demonstration of the possibility of flies infecting food with pathogenic organisms. Statistically, there is a considerable amount of correspondence between the prevalence of flies and the occurrence of infantile diarrhœa; and it has been repeatedly shown that the clearance of excreta, both human and animal, well away from the vicinity of houses and the cleaning up of the houses themselves, results in an enormous reduction in the incidence of this disease.

In September, 1911, there was an International Congress for the Study and the Prevention of Infant Mortality held in Germany, and Sir Arthur Newsholme, accompanied by Mr. Broadbent of Huddersfield (p. 253), attended on behalf of the British Government. There had been a considerable development in special infant clinics and hospitals in some of the towns in Germany. Hamburg at that time had 35 infant consultation centres, Berlin had seven, and Charlottenburg seven. The Medical Officer observes that from 25 to 35 per cent. of the total births in Berlin were illegitimate and, as in England, the death rate among the illegitimate infants was about twice that of the legitimate.³

¹ Charles V. Chapin, Superintendent of Health, Providence, Rhode Island, was a well-known American epidemiologist. There is a long account of the prevalent theories in regard to the carriage of infection by insects, including flies, in the last chapter of his book *The Sources and Modes of Infection*, 1910.

² See Stallybrass, C. O., *Principles of Epidemiology*, p. 342, for an excellent discussion of this subject.

³ Annual Report of the Medical Officer of the Local Government Board, 1911-12, p. li.

CHAPTER 3

THE ROYAL COMMISSION ON VENEREAL DISEASES

In Part II, chap. 5, an account is given of the operation of the Contagious Diseases Acts and of the national agitation against them which finally succeeded in securing their repeal in 1886. By repealing the Contagious Diseases Acts, Parliament, with the full concurrence of large sections of public opinion, had set its face against the compulsory medical examination of those women who were regarded as prostitutes by the senior police officers charged with the odious duty of administering this legislation. But the problem of venereal diseases remained, and every year new evidence was found by the medical profession of the evils, some immediate but many remote, which these diseases caused in the community. In 1913, for example, it was discovered by Noguchi and Moore¹ that general paralysis of the insane and locomotor ataxia were due to syphilitic lesions of the brain—often occurring many years after the original infection had been forgotten.

It had long been recognised that both syphilis and gonorrhœa were infective diseases transmitted by micro-organisms from one person to another; but, as we have seen (p. 266), it was not until 1905, that Schaudinn and Hoffman identified the spirochaete (*Treponema pallidum*) which is the infecting agent in the case of syphilis. The causative organism of gonorrhœa was discovered by Neisser in 1879, and it has been isolated from many parts of the body, in connection with a number of diseases, since that time. Thus—to give a few examples—Bumm detected the gonococcus in proctitis in 1884, Neisser in ophthalmia in 1879 and in arthritis in 1894, and Hocheisen in tenosynovitis in 1906.

By the end of the century it was easy for the bacteriologists to confirm the clinical findings of the physician in connection with gonorrhœa, but syphilis, which is a systemic disease remaining localised only for a short time, presented difficulties in diagnosis which were not solved until Wassermann and others introduced their famous complement-fixation reaction in 1906. The beginnings of a satisfactory method of treatment for syphilis came with

¹ Noguchi and Moore, 1913, *Journal of Experimental Medicine*, Vol. 17, p. 232. Hideyo Noguchi (1876–1928) was perhaps the greatest of the Japanese bacteriologists. He was responsible for advances in our knowledge in regard to syphilis, rabies, infantile paralysis, yellow fever, etc. Died in West Africa from yellow fever while conducting researches into that disease.

the discovery of salvarsan by Ehrlich in 1910. By 1910, therefore, the power of mankind to deal with this ancient enemy, which attacked the innocent as well as the guilty, had been enormously increased as a result of the discoveries of Wassermann and Ehrlich, and the time had arrived when it was necessary for those concerned with Public Health to consider how to use the knowledge the scientists had placed at their disposal to reduce the incidence of syphilis and to provide the widest facilities for the treatment of those who had contracted the disease. As far as the public services were concerned it was not an easy thing for any Government, in the atmosphere of popular opinion in 1910, to propose that the State or the local authorities should organise treatment centres for venereal diseases. The introduction of anæsthetics in childbirth had been frowned upon by the elect, until they were used in connection with the birth of Prince Leopold in 1853 (p. 68), when a miraculous change of opinion occurred; and just as the pains of childbirth had been regarded as a perpetual penance upon womanhood for the sin of their first mother, Eve, so the fearful results, visited upon the guilty and innocent alike, of syphilis and gonorrhœa were thought by many conscientious people to be a just punishment for the mortal sins which resulted in these diseases.

Views of this kind will seem to many in this generation to be at best mistaken and at worst hypocritical, but there is no doubt that they were sincerely held by many people, who would relieve poverty and help the afflicted, but whose sympathy stopped short at the mother of an illegitimate child or the person suffering from venereal disease, because there was such a large element of moral indignation in their consideration of these problems. The climate of opinion has indeed changed since those days.

Since the repeal of the Contagious Diseases Acts in 1886 there had been singularly little action by the Local Government Board or by the local authorities in connection with venereal diseases. Except as a part of the mortality returns, this subject is scarcely mentioned in the annual reports and little indication is given that venereal diseases were taking each year a heavy toll of the population, both in lives and in health. Up to 1910 there was every reason for the Local Government Board to leave this thorny subject alone. Venereal diseases were still associated in the minds of the public with the hated Contagious Diseases Acts and, until the discovery of methods for the diagnosis and treatment of syphilis, it did not seem to those in authority as if any effective action could be taken to abate the ravages of this infection.

Between 1910 and 1913, however, public opinion was moving

on this subject, largely stimulated by the fact that the new methods of diagnosis and treatment had been taken up enthusiastically by the hospitals and the medical profession generally. Support for an inquiry into the subject of venereal diseases came from the British Medical Association, the Society of Medical Officers of Health and a number of voluntary organisations. Information of an alarming character about the prevalence of venereal diseases and their influence upon the national health was becoming available. Much of what was said was exaggerated, but there was sufficient evidence obtainable from hospital records, from social surveys, and from the reports of a number of Royal Commissions and Committees of Inquiry, to afford a strong indication that the harm done to the community by the ravages of venereal diseases was very great. The Advisory Board for Army Medical Services appointed a Sub-Committee in 1903 to consider the question of the treatment of venereal diseases in the Army, and this Sub-Committee issued a series of four reports on this subject between 1904 and 1906. One of the recommendations of the Inter-Departmental Committee on Physical Deterioration was that a Commission of Inquiry into the prevalence and effects of syphilis should be held; and the Royal Commission on the Poor Laws were impressed by the amount of evidence they received about the effects of these diseases on the physique and stamina of the community. One medical expert, quoted in the Minority Report, expressed the view that these diseases constituted one of the greatest evils of the age.

One of the most interesting discussions on this subject, not primarily from the point of view of Public Health, is contained in the Report (1912) of the Royal Commission on Divorce and Matrimonial Causes. It refers to the results of syphilis and gonorrhœa in producing sterility and illness and other serious effects on parties and on their children. "We can conceive no cause," the Report says "which more fully justifies an application for divorce than this class of cruelty."

An important step towards the eventual organisation of a national service for the diagnosis and treatment of venereal diseases was taken in 1913, when the Local Government Board decided to undertake an inquiry into the adequacy and general character of the arrangements for the institutional treatment of these diseases in England and Wales. Dr. Johnstone, a medical inspector of the Board, was deputed to make the inquiry, and a summary of his findings appears in the Medical Officer's Annual Report for 1913-14.¹ It is prefaced by the significant observation that for several years

¹ Pp. *ci et seq.*

it had been evident "that the social convention of silence respecting these diseases and the absence of direct measures for their prevention was accompanied by very serious injury to the public health." The change in the attitude of the Board was due partly to the fact that means of diagnosis and treatment had become available, and partly to the decided action of the medical profession in drawing public attention to this evil by all the means at its disposal. Sir Arthur Newsholme's remarks in presenting Dr. Johnstone's report as a Parliamentary paper emphasise the consequences of both gonorrhœa and syphilis, if untreated. "The first-named is the less important of the two, although it is a frequent cause of chronic suffering and sterility in women, as well as the chief source of blindness occurring as the result of ophthalmia of the new-born. For preventing the serious consequences of this last-named disease much active work, happily, is already being done by sanitary authorities"¹ Newsholme referred to the number of abortions and miscarriages caused by syphilis and gave it as his opinion that complete notification of still-births would lead to the discovery of a large amount of hitherto untreated syphilis and that much infantile mortality in the first two months of life, as well as many still-births, would be avoided when systematic measures were taken for the recognition and treatment of syphilis in expectant mothers. Johnstone in his report refers to the fact that syphilis is spread less by habitual or professional prostitutes than by women who are only occasional prostitutes and by men "who have neglected to secure competent advice or to observe it when given"; and Newsholme comments that it was of primary importance in the public interest that facilities for gratuitous Wassermann and allied tests should be made available. This was, at the time, a courageous expression of opinion and it helped to stimulate public interest in this subject; but much was to happen before it became practical policy. Johnstone criticised the accommodation at Poor Law institutions provided for this purpose as not well adapted to the treatment which cases of venereal disease require, and he came to the conclusion that there was everywhere a great dearth of the best means of accurate diagnosis and of treatment. He sums up the requirements as follows :—

"It cannot be too strongly urged that the best method of controlling venereal diseases and protecting the free from

¹ Under the Public Health (Ophthalmia Neonatorum) Regulations, 1914. These Regulations required notification by both doctor and midwife. In the Regulations made in 1926, notification was by the doctor only. The success of the measures for combating infantile blindness caused by infection at birth constitutes one of the major triumphs of Preventive Medicine.

infection would be the provision of means for early and accurate diagnosis, with skilled advice and adequate treatment available for all infected persons. In short, the essence of the problem is how to get a willing patient at the earliest time to the doctor from whom or to the institution from which such advice and treatment is to be had.”¹

While the Medical Officer of the Board was writing his account of the work of the Public Health Service for 1913–14, in which the report above referred to appeared, the Royal Commission on Venereal Diseases was sitting. It was appointed on November 1st, 1913, and its final report was issued on February 11th, 1916. When the Royal Commission commenced its deliberations the country was at peace; when the final report was submitted the world was at war. One of the results of the war, as far as this and other belligerent countries were concerned, was a gigantic increase in the incidence of gonorrhœa and syphilis, directly attributable to the movements of population, the absence of men and women from their homes and from their normal social restraints, and the general unsettlement of war.²

The Chairman of the Royal Commission was Lord Sydenham and its members were Sir David Brynmor Jones, Sir Kenelm Digby, Sir Almeric Fitzroy, Sir Malcolm Morris, Sir John Collie, Dr. Arthur Newsholme, Canon J. W. Horsley, Dr. J. Scott Lidgett, Dr. F. W. Mott, Dr. Mary D. Scharlieb, Mr. James E. Lane, F.R.C.S., Mr. Philip Snowden, Mrs. Louise Creighton, widow of the late Bishop of London, and Elizabeth Miriam Burgwin. Of these, six were members of the medical profession. The terms of reference of the Royal Commission were as follows :—“ To inquire into the prevalence of Venereal Diseases in the United Kingdom, their effects upon the health of the community, and the means by which those effects can be alleviated or prevented, it being understood that no return to the policy or provisions of the Contagious Diseases Acts, of 1864, 1866 or 1869, is to be regarded as falling within the scope of the inquiry.”

Apart from a very clear description of the venereal diseases and the means whereby they are transmitted, the Final Report of the Commission deals with the prevalence of these diseases, their effects, and the means of treatment and prevention then available; and the Commission received evidence from a large number of witnesses including Dr. Stevenson of the Registrar-General’s Office,

¹ Annual Report of the Medical Officer of the Local Government Board, 1913–14, p. civ.

² Venereal disease has been aptly referred to as “ the camp follower of war.”

Dr. Newsholme, Medical Officer of the Local Government Board, Drs. Sidney Coupland and C. Hubert Bond, Commissioners in Lunacy, Sir John Collie, Dr. F. W. Mott, Mr. N. Bishop Harman of the West London Hospital, and Mr. Frank Kidd, Assistant Surgeon of the London Hospital. Newsholme considered that among the immediate needs was the provision of gratuitous examination of material from patients for the detection of spirochaetes or gonococci and for the Wassermann test. At child welfare clinics syphilis could be recognised and early treatment arranged. Ante-natal clinics had been organised in connection with St. Thomas's Hospital and other hospitals at which expectant mothers, including those who had had previous miscarriages, could attend.

The main recommendations of the Royal Commission were as follows:—

Extended facilities should be made available for the diagnosis of venereal diseases by laboratory methods and the fullest use should be made of the laboratory facilities at universities and hospitals.

The organisation of means of treatment should be in the hands of the larger local authorities, namely, the councils of counties and county boroughs.

Treatment should be free to all, and, at any given institution, should not be restricted to persons resident in any particular area.

Special arrangements, such as evening clinics, should be made for the treatment of out-patients at hours convenient to the working classes.

Subject to proper safeguards, local authorities should be empowered to supply salvarsan or its substitutes gratuitously.

Expenditure on schemes of treatment should be assisted by grants from the Exchequer which should be equivalent to 75 per cent. of the expenditure incurred by local authorities.

No system of notification should be put into force at the present time, but this should be re-considered later in the light of experience.

There should be a prohibition of all advertisements of remedies for venereal diseases.¹

Statutory recognition should be given to the principle that infectious venereal disease constitutes an incapacity for marriage.

The National Council for Combating Venereal Diseases should be recognised by Government as an authoritative body for the purpose of spreading knowledge and giving advice in regard to the question of venereal diseases in its varied aspects.

¹ This would require legislation.

The Final Report of the Sydenham Commission was regarded on all sides as a document of the utmost importance, and its recommendations settled the form of the new Venereal Diseases Service and hastened the day when it was to come into full operation. It was to provide, through the counties and county boroughs, free facilities to all for diagnosis and treatment. Notification was a question which was reserved for future consideration and, for all patients, attendance at a venereal diseases centre was voluntary and not compulsory. In order to give effect to the recommendations of the Commission in regard to diagnosis and to treatment either in hospital or elsewhere, legislation was not required, as, in the opinion of the advisers to the Local Government Board, all the necessary powers were already available in the Public Health Act, 1875, and the Public Health (London) Act, 1891. All that would be necessary would be to make regulations relating specially to the medical treatment of venereal disease, and power to do this was contained in the Public Health Acts. The Board was further advised that if a system of notification were to be adopted this could be effected under the Infectious Diseases Notification Acts. In the end the Commission decided not to recommend the compulsory notification of venereal diseases, since "any attempt to enforce notification in existing circumstances would inevitably drive a still greater proportion of the total patients suffering from these diseases than at present to druggists, herbalists, and other unqualified practitioners, treatment by whom is now responsible in large measure for their calamitous after-consequences."¹

The Government lost no time in implementing the substantive parts of the Royal Commission's recommendations and on July 13th, 1916, the Local Government Board's Regulations were issued.² During the latter part of 1916 and the early part of 1917 the whole of the resources of the Medical Department were devoted to expediting the preparation of schemes by local authorities. The Medical Officer himself in the case of some of the larger authorities, and the Medical Inspectors in other places, attended conferences and discussed the problems of providing treatment centres and supplying diagnostic facilities in the light of local circumstances and needs. In the provision of the various requirements of the new service, the universities and the voluntary hospitals played a notable part. Sometimes special arrangements had to be made, particularly in port towns, and the new service found it necessary

¹ Annual Report of the Medical Officer of the Local Government Board, 1915-16, p. xxv.

² Public Health (Venereal Diseases) Regulations, 1916.

from the beginning to organise evening clinics for those workers who were unable to attend during the day time. Conditions of secrecy were best observed by allowing persons to attend from other areas and by arranging clinics at hospitals rather than at *ad hoc* centres. By the middle of 1917 venereal diseases arrangements under the Regulations were in operation in many areas and the beneficial work of providing free diagnosis and treatment was initiated. According to the Annual Report for 1916-17, by the end of March, 1917, schemes had been submitted to the Board by 86 out of the 145 councils charged with this duty, and these covered a total population of about 23,500,000.

The functions of local authorities were not, however, fully completed when satisfactory arrangements for the treatment of persons suffering from venereal diseases had been made. It is one thing to provide treatment facilities and quite another to ensure that those who need treatment are aware of the places where it may be obtained and of the great benefits derived by sufferers from these diseases who take the trouble to attend regularly at the centres until they are certified as cured. There are no diseases in respect of which the dangers of apathy or ignorance are so great as in the case of gonorrhœa and syphilis. Many of the younger people of both sexes were at that time completely ignorant of the risks they were running by indulging in certain kinds of relationships, or of the help they might receive if, unfortunately, they became infected. The Victorian policy of silence in regard to these diseases had been all too successful.

The educational work necessary for the successful conduct of the venereal diseases campaign under the new Regulations was entrusted to the local authorities, aided by the National Council for Combating Venereal Diseases. During the period when the local authorities were organising the service, the National Council gave invaluable help to the Local Government Board by stimulating interest in the subject throughout the country. When the venereal diseases arrangements had been satisfactorily completed in each area, the National Council commenced its educational programme, designed to enlighten the public on every aspect of the subject.

In May, 1917, Parliament passed the Venereal Diseases Act. This Act made it illegal, in areas where an approved scheme for the treatment of venereal diseases was in operation, for any person except a duly qualified medical practitioner to treat any person for venereal disease, to prescribe any remedy therefor or to give any advice in connection with treatment. It also forbade advertisements offering to treat persons suffering from venereal disease.

By the end of the year 1918 the Venereal Diseases Service had taken its place along with the Tuberculosis and Child Welfare Services as an essential part of the national provision for the care of the health of the people. The new service was still under the special supervision of the Local Government Board, the Medical Inspectors of which frequently visited local authority areas to assist in the solution of the many detailed difficulties which were occurring. Difficulties were experienced in connection with the choice of premises for venereal diseases clinics, the appointment of properly qualified medical staff, pathological arrangements, the work of propaganda and many other matters. Towards the end of 1918, the Local Government Board issued a circular to local authorities which gave advice on the subject of the detailed organisation and administration of venereal diseases schemes. It was suggested that it was highly desirable that in addition to more frequent clinics at existing centres, further centres should be opened. As far as the larger authorities were concerned the advisability of the appointment of a whole-time Venereal Diseases Officer ought to be considered. As regards the provision of medical staff the Board had compiled a list of those with special experience of the treatment of these diseases in the Army and Navy and this was at the disposal of local authorities.

One difficulty which showed itself in 1918 was that in some areas a large proportion of patients suffering from syphilis failed to complete their course of treatment, discontinuing attendance after the cessation of symptoms but long before a cure had been effected. This difficulty is one which can never be completely overcome in a non-compulsory scheme. There was some excuse for defaulting in treatment at that time as the arsenical preparations then in use had, in the case of many patients, toxic effects which were highly unpleasant and to some extent dangerous. This problem was considered by the Salvarsan Committee appointed by the Medical Research Committee and advice was given in regard to the preparation and administration of these drugs.¹ Another subject of research was the standardisation of the Wassermann test. This was dealt with by a Special Committee of the Medical Research Committee, appointed in 1918, which recommended to the Local Government Board that the original Wassermann test, as defined

¹ The first of these preparations—salvarsan—was synthesised by the German chemist Paul Ehrlich (1854–1915). Ehrlich founded this work on an arsenical preparation, atoxyl. After years of work he succeeded in producing, after 606 attempts, salvarsan. This was found to be too toxic to be used freely on patients, and less dangerous preparations, such as neo-salvarsan, were evolved.

by the Royal Society of Medicine, should be the standard in the Venereal Diseases Service.

In order to improve the arrangements for the treatment of venereal diseases in seamen—a class more than usually subject to these diseases owing to their absence from home and the many temptations existing in the ports—the Board issued in 1918 a leaflet giving information about centres available in the United Kingdom, and supplied a record card to be carried by those under treatment, giving details of the drugs already used.

It is evident from the above brief account of the progress of the venereal diseases schemes in this country in 1917 and 1918 that energetic action by the Local Government Board and the major local authorities had evolved an efficient service for the diagnosis and treatment of venereal diseases in all centres of population. The future development of this service was to be in the direction of a gradual improvement in methods of treatment, in the provision of more centres, and in the spread of education on this subject by leaflets, films and lectures.

By 1920, when the new service had been in operation for less than three years, doubts were being expressed about its success, not only from the point of view of treatment but also of prevention. The main difficulty in regard to the treatment of syphilis was that unless the disease was diagnosed and treatment commenced in the early stages the course was a very long one lasting up to two years. In practice it was found by the Venereal Diseases Officers that a large percentage of patients ceased to attend as soon as the acute symptoms subsided and long before a cure, as tested by the Wassermann reaction, had been effected. Such patients were likely to suffer from such diseases as general paralysis of the insane and locomotor ataxia or from vascular degeneration years later when the original infection had, perhaps, been forgotten. Venereal diseases clinics were, of course, conducted under conditions of strict secrecy and very little could be done in such circumstances to remind defaulters of their obligations both to themselves and to society. The question of the use of compulsion inevitably arose. Compulsion might be exercised by requiring the notification of venereal diseases by medical practitioners or by enforcing the continuation of treatment until cure had been effected. Both of these methods of compulsion have their disadvantages. Notification had been advocated by local authorities and by some voluntary societies, and in a few cases legislation has been contemplated by town councils having as its object some form of compulsion in connection with treatment, but such attempts have invariably been

unsuccessful. One of the first of these attempts was that of the City of Liverpool in 1920. Liverpool, as a large city possessing a great port, has always been confronted by serious problems in relation to venereal diseases, and it was thought at that time that additional legal powers, beyond those contained in the Regulations, would enable more effective control of the incidence of these diseases to be exercised. The draft clauses of a private Bill for this purpose contained provisions for compulsory treatment and proposed to make it an offence for any person knowingly to commit any act calculated to infect another person.¹ This proposed legislation, however, met with much opposition and the clauses relating to venereal diseases were withdrawn before being submitted to the House of Commons.

The City of Bradford, in 1925,² succeeded in obtaining powers for the compulsory notification of venereal diseases for a period of five years. The Act did not, however, contain any provision for the compulsory treatment of these diseases and, as a consequence, although a number of notifications were received, little effective use could be made of the powers thus conferred. In view of this fact, the Bradford Corporation did not apply to Parliament for the continuance of notification after the expiration of the five-year period.

Venereal diseases *prevention* was also a subject of controversy and this question was of great interest to all who had to deal with the administration of local authorities' schemes. During the first World War, the Society for the Prevention of Venereal Disease was formed, and this body advocated prophylactic methods which did not find acceptance with the older National Council for Combating Venereal Diseases. It was unfortunate for the continued progress of the campaign against these diseases that this schism occurred in the ranks of those who were equally anxious to do all in their power to abate this grave social evil; and the Minister of Health, in 1923, appointed a Committee of Inquiry on this subject, of which the Chairman was Lord Trevethin.³ The terms of reference were:—"To consider and report upon the best medical measures

¹ Liverpool, Annual Report of the Medical Officer of Health (Dr. E. W. Hope), 1920, pp. 108-9.

² Bradford Corporation Act, 1925, sec. 68.

³ Amongst the members were: Surgeon-Captain Reginald Bond, Dr. John Brownlee, Professor W. Bullock, Professor G. Dreyer, Group-Captain Martin W. Flack, Lt.-Col. (later Sir Francis) Fremantle, Professor H. R. Kenwood, Major-General Sir W. B. Leishman, Dr. (later Sir Frederick) Menzies and Sir Bernard Spilsbury. Mr. H. A. de Montmorency of the Ministry of Health was Secretary to the Committee.

for preventing venereal disease in the civil community, having regard to administrative practicability, including cost." This Committee, apart from the Chairman and Deputy Chairman, was composed wholly of medical practitioners, and it received evidence from the Ministry of Health, the British Medical Association, the Society for the Prevention of Venereal Disease, the National Council for Combating Venereal Diseases, the Federation of Medical Women, and from a number of Medical Officers of Health, including Dr. E. W. Hope, of Liverpool, Dr. A. Mearns Fraser, of Portsmouth, Dr. (later Sir John) Robertson, of Birmingham, and Dr. J. Middleton Martin, of Gloucestershire.

The report of the Trevethin Committee, published in 1923, expressed the general opinion that the work of the existing venereal diseases clinics was of high value and that the system should be encouraged, extended and improved. It stated that, from the point of view of public health, defaulting in regard to treatment of venereal diseases was not so serious as the statistics made it appear, but that, nevertheless, it was an important factor in the spread of these diseases. Compulsory notification would be of little value unless it was supported by a system of compulsory treatment and, if necessary, detention. In the view of the Committee, properly and promptly applied disinfection in the case of an individual man would almost certainly prove effectual, but as far as the community at large was concerned no sufficient case had been made out for the provision of facilities for disinfection at the public expense. The Trevethin Committee summed up by saying that where there was a limited amount of money available it should be spent on:—

- (a) treatment of disease;
- (b) continuous education of the community in regard to the nature and dangers of venereal disease and the importance of seeking prompt and skilled treatment; and
- (c) the elimination of those conditions of life which tend to foster promiscuous intercourse and the spread of disease.¹

The effect of this well-known report was to support the view of those who considered that the lines upon which the Venereal Diseases Service had hitherto been conducted were sound and likely in the long run to reduce markedly the effects of this social evil upon the health of the community. It represented, therefore, a victory for the educational policy of the National Council for Combating Venereal Diseases (later called the British Social Hygiene

¹ Report of the Committee of Inquiry on Venereal Disease, 1923, p. 10.

Council), as against the prophylactic ideas advocated by the Society for the Prevention of Venereal Disease. But, in addition, the Trevethin report, with its insistence on adequate provision for treatment in all areas and its emphasis on the value of education, stimulated general progress in connection with venereal diseases schemes.

In the period between the two wars the principal adviser to the Ministry of Health on Venereal Diseases was Colonel L. W. Harrison, C.B., D.S.O.

CHAPTER 4

PUBLIC HEALTH DURING AND AFTER THE FIRST WORLD WAR, 1914-29

In the sphere of Public Health the period immediately after the 1914-18 war is noteworthy for the establishment of the Ministry of Health.

This movement for the creation of a Ministry of Health derived its argumentative strength partly from the then universally admitted defects of the Local Government Board, and partly from the positive case in favour of the establishment of an instrument of government which would regard Public Health as its primary function. The record of the Local Government Board in the field of the Personal Health Service was not one of which a Central Department had any reason to be proud. Seemingly reluctantly, it had allowed local authorities to initiate the Child Welfare Services but it had shown little disposition either to lead or to encourage. The movement for the care of the mother and the young child had been in active existence for more than a dozen years before the Board saw fit to accord it statutory recognition through the Maternity and Child Welfare Act of 1918.

It had received criticism in many quarters, not least in the report of the influential Poor Law Commission. The Majority Report discussed the question of the Board's powers and status and suggested that the Minister responsible should be a Secretary of State. The more forthright Minority Report did not refrain from animadverting upon the fact that notwithstanding the enormous importance of the Public Health work of the local authorities, there existed no Department responsible for their supervision, guidance and control.

The Local Government Board had done useful work in the sphere of sanitation up to the end of the century, but in the new era then commencing it became more and more out of touch with opinion on the Public Health side. It dealt with local government adequately, with the Poor Law in an uninspired and unadventurous manner, and with Public Health as a subject of secondary importance. The Board possessed its nineteenth century traditions and it showed no disposition to depart from them. It prolonged its quarrel with the Board of Education over the Child Welfare Services, but failed to produce any coherent plan of its own to guide and control this important and developing movement. It was late in organising a Tuberculosis Scheme for the country and still later in

providing for the treatment of Venereal Diseases. Above all, the Local Government Board was not organised on the basis of a Central Health Department. Its main business was Local Government and the Poor Law, with Public Health in the background.

After the war, however, the country was not in the mood to allow Public Health to remain the background interest of any Government Department, and an agitation sprang up during the period from 1917 to 1919 which was singularly like that which had forced the House of Commons 70 years earlier to pass the first Public Health Act. There were petitions to the President of the Local Government Board from trade unions, women's societies, social workers, etc., and the British Medical Association, the Association of Municipal Corporations and the County Councils' Association expressed themselves as being strongly in favour of the establishment of a Government Department primarily concerned with health. Lord Rhondda, at first President of the Local Government Board and later Minister of Food, joined the ranks of those who were demanding the appointment of a Minister of Health and it was his immediate influence which led to the Prime Minister's acceptance of the idea of the creation of the new Department.

Newman¹ expresses the opinion that the term "Ministry of Health" was first suggested by Jeremy Bentham in his Constitutional Code, published in 1820. John Simon returned to this subject by prefacing to a volume of reprinted City of London reports, dated May 15th, 1854, an essay upon the need for the appointment of a Minister of Public Health; and he uses directly the exact title of Minister of Health in *English Sanitary Institutions*. Leading up to this subject, in the essay referred to above, Simon pleads for the principle "whithersoever it may lead" that Christian society should leave none of its children helpless. "There should be some tangible head responsible not only for the *enforcement* of existing laws but likewise for their *progress* from time to time, for their *completion* where fragmentary, for their *harmonisation* where discordant."

These ideas on the subject of the grouping of all health services under one Ministry were not allowed to sink into oblivion and from time to time they were revived. One of the most important of these occasions was in 1878 at the second Annual Congress of the Sanitary Institute at Stafford when, under the presidency of Mr. Edwin Chadwick, Dr. Benjamin Ward Richardson gave a paper on "The Constitution and Function of a Ministry of Health." The name of any new department concerned with health which

¹ Newman, Sir George, *The Building of a Nation's Health*, p. 116.

the post-war Government might establish was already almost pre-determined.

A Ministry of Health Bill had been introduced in the House of Commons in November, 1918, but almost immediately afterwards there was a general election, following the Armistice. In February, 1919, a re-drafted Bill on largely the same lines as the first one received its first reading, being introduced by Dr. C. Addison, then President of the Local Government Board. On the second reading (February 26th), he referred to the number of different departments dealing with Public Health and emphasised that the central idea of the Bill was to fix responsibility for these services. During the ensuing debate there was general agreement on the need for a further centralisation of the direction of health services under a single Ministry, and the proceedings were enlivened and perhaps enlightened by the not inaccurate observation of Sir Watson Cheyne (a medical consultant of high standing) that the Minister would have to be a superman to do all that was required of him. During the Report stage, Government amendments were inserted in the Bill to confer powers on the Minister of Health to initiate and direct research and to transfer to him responsibility for the medical inspection and treatment of school children.

The Bill became law on June 3rd, 1919. Under the Ministry of Health Act, 1919, certain powers and duties residing in other departments were grouped under the new Minister. These included all the functions hitherto exercised by the Local Government Board, and the powers and duties of the Insurance Commissioners, of the Board of Education in respect of the medical inspection and treatment of school children, of the Privy Council and the Lord President of the Council under the Midwives Acts, 1902 and 1918, and of the Home Office in connection with infant life protection. What the Act did not do was to transfer the medical side of the administration of the Factory Acts to the new Department and this was probably not desirable, as inspection of factories and the care of the health of those who work in them are subjects which are indissolubly connected. Nor were the powers and duties of the Board of Education in regard to the medical inspection and treatment of school children actually transferred to the Ministry of Health. By a typical compromise, contained in the Act, the Board of Education was allowed to continue to exercise these powers and duties on behalf of the Minister of Health and with his authority, "under such conditions as he may think fit."¹

But, unfortunately, the new Ministry, which did not secure all

¹ Ministry of Health Act, 1919, sec. 3(1)(d).

the health functions which might conceivably have been transferred to it, was saddled with responsibilities not properly belonging to the sphere of "health" at all. The Poor Law, Local Government, Housing and the other duties of the now defunct Local Government Board were added to it, mainly for the reason that there was no other Department of State able or willing to accept these functions. It would certainly have been appropriate for Local Government, at least, to have become the responsibility of the Home Office, a Department not too seriously overburdened with work at that time. But Public Health, a function properly discharged by the new Ministry, was so closely bound up with the constitution and activities of local authorities that it was thought undesirable to transfer responsibility for them to the Secretary of State for Home Affairs. The Ministry of Health, therefore, at the outset was burdened with an immense complex of multifarious duties and there was some concern, both at the time of the passage of the Bill through Parliament and afterwards, as to whether any Minister, and even any Government Department, could be expected to handle efficiently so many diverse subjects extending over such a wide front. During the third decade of the century this burden was greatly increased by the expansion of housing legislation.

In the sphere of Public Health it became the duty of the Minister, under the Act, to take such steps as might be desirable for the carrying out of measures for the prevention and cure of disease, the avoidance of fraud in connection with alleged remedies therefor, the treatment of physical and mental defects, the treatment and care of the blind, the initiation and direction of research, the collection, preparation, publication and dissemination of information and statistics relating thereto, and the training of persons for health services.¹ As regards the Poor Law, the Ministry of Health took over responsibility for this centuries-old service, and its administration continued precisely as it had been under the Local Government Board, without a change either of name or of method. Under the surface, however, there was much ferment of thought about the future of this service. To many social workers "the break-up of the Poor Law" seemed a necessary preliminary to the establishment of a system which would accord a larger measure of social justice to the poorer classes of the community, when the inevitable misfortunes of life, inescapable by any kind of forethought or self-denial, befell them. Interest in this subject was profound after the end of the war. Many people concerned with social welfare had read the report of the Royal Commission on the Poor Laws, and more had

¹ Ministry of Health Act, 1919, sec. 2.

paid thoughtful attention to the writings of Sidney and Beatrice Webb with their insistence on the need for social justice, both in the interests of the working classes and of the community as a whole. According to the point of view of the left wing reformers, the essential preliminary to the provision of a better life for the workers of all grades was the root and branch abolition of the Poor Law and the extirpation, once and for all, of the policy associated with it. The practical alternatives before the country were the acceptance of the proposals contained either in the Majority Report or the Minority Report of the Royal Commission; and, for a number of years after the war, Parliament, immersed in the details of reconstruction and facing numerous strikes and a serious trade depression, postponed any definite action on this subject. Apart from political considerations which would be, of course, the deciding factor, the Majority proposals were attractive because they were essentially administrative and the most important part of them could be comfortably contained in a single Act of Parliament. But the fundamental defect of the Poor Law, as the reformers saw it, was not one of administration but of principle. Their position was that destitution was preventable just as cholera, typhus and plague were preventable, and could be abolished just as State action had abolished illiteracy or the use of little children's labour in the cotton mills.¹ There was thus no possibility of compromise between those who regarded destitution as a matter of relief and those who held the view that it should be handled as a matter of prevention. The difficulty attaching to the preventive approach to destitution was that it involved changes in the industrial and social structure for which, in the third decade of the twentieth century, the country was not yet ready.

The Minister of Health, with his wide duties and responsibilities, took over the burden of office in 1919 with the good wishes of all parties. The first Minister of Health was Dr. Addison,² who had piloted the Bill through the House of Commons, and he had the good fortune to obtain the services of Sir Robert Morant as the Permanent Secretary of the new Department. Morant had been the Chairman of the Insurance Commission for seven years, and

¹ Webb, Sidney and Beatrice, *English Poor Law Policy*, p. 303.

² Now, the Rt. Hon. Viscount Addison of Stallingborough, K.G., P.C. Minister of Munitions, 1916-17; Minister of Reconstruction, 1917-19; President, Local Government Board, 1919; Minister of Health, 1919-21; Minister without Portfolio, April-July, 1921; Minister of Agriculture, 1930; Secretary of State for Dominion Affairs, etc. Lord Addison was one of the two medical practitioners who have become Minister of Health—the other being the Rt. Hon. Walter Elliot, P.C., M.P.



VISCOUNT ADDISON OF STALLINGBOROUGH (1869-)

under his inspired guidance the National Health Insurance Service had become an accepted part of the State's provision for social welfare. He was concerned with the drafting of the Ministry of Health Bill during 1918, and during the 18 months after its passage into law, as Secretary of the new Ministry, he was engaged in the complicated business of transferring various functions to it from other Departments. As Sir George Newman says of this aspect of Morant's work, "his broad and wise understanding of its future gave it the elasticity and potentiality which made its expanding work possible."¹

Some of the disadvantages of the continued separation of the central direction of the School Medical Service from the remainder of the Public Health Services were removed by the appointment of Sir George Newman to the post of Chief Medical Officer of the Ministry of Health, in addition to his similar post at the Board of Education. In 1919 the series of the Annual Reports of the Medical Officer of the Local Government Board terminated and a new series began. The Report for 1918-19 was the last of a famous series begun by Sir John Simon in 1856 under the General Board of Health, continuing when the Medical Department was responsible to the Privy Council and during the many years when it was an integral part of the structure of the Local Government Board. Sir George Newman, in his letter submitting to the Minister of Health the last Annual Report on the work of the Medical Department under the Local Government Board, pays an eloquent tribute to his predecessors, Sir John Simon, Dr. Seaton, Sir George Buchanan, Sir Richard Thorne Thorne, Sir William Power and Sir Arthur Newsholme, who had played so great a part in the building up of the English Public Health Service.

The new Department took over the establishment of the Local Government Board. During the course of nearly 50 years the Medical Department, transferred to the Local Government Board in 1871, had much expanded in size as new duties in regard to Sanitation, the Inspection of Foods, Maternity and Child Welfare, Venereal Diseases, Tuberculosis and many other subjects had been placed upon it by the general development of the Public Health Service. In 1919, when the transfer to the Ministry of Health took place,² the Medical Department possessed a large staff of highly skilled and experienced administrators, whose services were to

¹ Morant died in March, 1920.

² The change was largely one of name, the offices, and the administrative and medical staff of the Local Government Board becoming those of the Ministry of Health.

prove of great value in connection with the developments which occurred during the following 20 years. At the end of the Local Government Board period, the staff of the Medical Department was organised on the basis of four branches concerned with Sanitation, the Pathological Laboratory, Food Inspection and the Government Lymph Establishment. Under the heading of Sanitation was included a complex of duties, mainly inspectorial, including Epidemics, Venereal Diseases and Tuberculosis. Working under Sir Arthur Newsholme, were Dr. (later Sir George) Buchanan, First Assistant Medical Officer, and Dr. R. J. Reece, C.B., Second Assistant Medical Officer. The Assistant Medical Officers included Dr. F. J. H. Coutts and Dr. R. Bruce Low, C.B. Amongst the staff of Medical Inspectors were Dr. S. Monckton Copeman, Dr. T. Carnwath, D.S.O., Dr. H. A. Macewen, O.B.E., Dr. J. R. Hutchinson, Dr. J. E. Chapman, and Dr. A. S. MacNalty. The Chief Inspector of Foods was Dr. A. W. J. MacFadden, C.B., assisted by Dr. J. M. Hamill and Dr. G. W. Monier-Williams; and Dr. F. R. Blaxall was Bacteriologist to the Government Lymph Establishment.

Vital Statistics

The population (England and Wales) was given at the Census of 1921 as 37,885,242. In the period of a hundred years, therefore, the population of England and Wales had increased from 12,000,000 to more than three times that number. Such an increase could only have been achieved in the exceptional economic and industrial circumstances of this country in the nineteenth century with markets throughout the world clamouring for manufactured goods, for which food and raw materials were received in return. The English monopoly of the means of producing manufactured goods cheaply and in large quantities could only, in the nature of things, last for a relatively short period and, before the end of the century, competition from Germany and Japan was making inroads into markets hitherto regarded as the exclusive preserve for this country's exports. By that time, however, the population of the British Isles had become equal to that of France, and foreign investments, apart from trade and shipping, had assured for a long period the food supplies which this country was failing to produce for itself.

The birth rate was, however, falling rapidly, mainly in the ranks of the middle and upper classes and, except amongst the very poor, the Victorian family of ten or a dozen children was seldom seen. In the period 1871-75 the birth rate had reached the peak figure of 35.5, and it began to fall rather rapidly after 1890, at a time when the general standard of living of the community as a whole had

reached its highest point. By the quinquennium 1916–20, which included some of the war years, this figure had dropped to 20.1. There is little doubt that the rapid decline of the birth rate after 1890 was due very largely to the spread of the knowledge of contraceptive methods amongst people in the higher income groups, and there was an increasing tendency as the years went by for these methods to be adopted by the better-off skilled workers. But the use of contraceptives must be regarded as only the means by which, largely, the birth rate was reduced, and the desire for smaller families, a social phenomenon of great consequence in the twentieth century, can be traced to a number of causes, including the emancipation of women and the general demand for more luxury and more comfortable conditions of living. The birth rate rose again in 1920 and 1921 as a result of the demobilisation of the armed forces, but later in the decade the tendency towards a decline in the annual number of births re-asserted itself, and in the period 1926–30 the rate had dropped to 16.7.

The declining birth rate was, however, masked by an almost equal reduction in the death rate, which in the period 1916–20 had declined to the figure of 14.4. The rate of natural increase of the population was therefore almost as high during the first two decades of the twentieth century as it had been throughout the nineteenth century. In the third decade, however, the decline in the death rate failed to keep pace with the progressive lowering of the birth rate, and a significant reduction in the rate of natural increase occurred. Such a reduction was doubly unfortunate after a war in which nearly 800,000 men from these islands were killed.

Until the end of the nineteenth century the infantile mortality rate had remained obstinately at or near 150, but after 1900 a highly welcome decline took place. In the period 1901–05 this figure had dropped to 138, in 1911–15 to 110, and in the quinquennium 1916–20 to 90. The reduction of the infantile mortality rate to the latter figure meant that, as compared with the nineteenth century, the lives of 60 infants out of each 1,000 born were being saved each year, and this was a substantial offset to a declining birth rate. Some of the reduction in infantile deaths must be ascribed to better housing and a higher standard of living; but much of the credit for this saving in infant life was due to the Child Welfare Service which had, by 1910, attained a reasonably high standard of efficiency. Another favourable factor was the mortality rate from tuberculosis (all forms) which, in the period 1916–20, had fallen to 1.4 per thousand of the population.

The Industrial Scene between 1918 and 1930

As mentioned in Part III, chap. 3 (pp. 274–5), the numbers of persons employed in the various branches of industry fluctuated to some extent in the inter-censal periods, but the total number gainfully occupied rose in accordance with the continuing increases in total population. Even in the early years of the twentieth century there was a pronounced tendency for the proportion of sedentary workers to increase and this tendency became more manifest after the end of the first World War, partly, at least, as a result of the spread of secondary education.

The actual numbers engaged in the staple industries of the country showed, however, no very serious signs of decline. If we take coal-mining as the most fundamental of English industries and contrast the number of males employed in 1931 (891,000) as compared with 1911 (914,000), it will be seen that the decline in the number employed was relatively small in spite of increased mechanisation. Agriculture, also being slowly mechanised, still employed more persons than any other single industry, the numbers in 1931 consisting of 1,116,000 males and 55,000 females. Seafaring, in the years following the war, was a relatively popular occupation, employing (1931) 137,000 males and 1,500 females. Indeed, amongst all the major occupations referred to in the Census returns, the number of persons engaged in one way or another on the sea fluctuated least widely. Thus, in 1851 the number of males employed in seafaring was 144,000, in 1931 137,000. Changes had, however, taken place in the distribution of workers in the various categories within this group. A gradual change from coal to oil as the source of power in the larger ships reduced the numbers employed in the engine-rooms, whereas an increase in the passenger-carrying capacity of the larger liners and a rapid advance in the standards of luxury had added greatly to the numbers of those employed in duties of a domestic character such as stewards and cooks.

The staple industries of cotton and wool, were, however, losing ground, and other fabrics such as rayon were progressively ousting the older textiles from the position of predominance which they had held since the beginning of the Industrial Revolution. The increased popularity of synthetic fabrics especially affected the cotton industry which suffered a period of serious decline after 1918. This is shown in the Census returns, which give the number employed in the cotton industry in 1911 as 233,000 males and 371,000 females, and in 1931 162,000 males and 261,000 females. Alteration in feminine fashions, and notably the substitution of

short skirts for long, is shown in the greatly increased number of operatives employed in the hosiery industry after the first World War, *viz.*, 26,000 males and 73,000 females in 1931, as contrasted with 15,000 and 41,000 in 1911.

Of the newer industries which grew in stature in the 'twenties of this century, pride of place must be given to the manufacture of motor-cars. The cheap family car, sold in hundreds of thousands in the years following the war, owes its origin in this country to the Nuffield and Austin organisations and to the vision and—let it be said—courage of the founders of these firms. In the first 20 years of the century the possession of a car was a pleasure reserved solely for the affluent; but by 1931 car ownership had spread to the ranks of the lower middle class and second-hand cars and motor-cycles were purchasable by those with still smaller incomes. More than any other single influence the motor-car changed the habits and customs of the people of this country. For the first time since the early part of the nineteenth century there appeared a competitor to the all-conquering railway both in regard to the transport of passengers and of goods over long distances. The main roads of England, deserted during the railway age, came to life again, and the Great North Road and Watling Street hummed night and day with motor-coaches and transport wagons, the former becoming faster and more comfortable and the latter larger as the years went by. Hotels which in the coaching days had been centres of activity and with the advent of the railways had decayed, received a new and permanent lease of life. The monotony of village life—one of the causes of the drift of the rural population to the towns—was appreciably mitigated by the advent of the motor-bus and, perhaps not less, by the discovery of wireless. Contact with the life of towns, rendered possible by cheap and efficient transport, revolutionised the cultural life of the countryside.

The period after the first World War was one of progressive improvement in the conditions of work in many occupations. New industries such as the manufacture of motor-cars and wireless which in total employed hundreds of thousands of operatives, commenced, as far as buildings, equipment and general amenities were concerned, far in advance of the older coal, iron and steel, and textile trades. By the middle of the 'twenties a working week of 48 hours was attained in the new industries without undue efforts on the part of the trade unions. An attempt to reduce the hours of labour and increase wages in the coal-mining industry led to the General Strike of 1926, the consequences of which partly provoked and partly worsened the great depression of 1929–1932.

The Trade Unions

As we saw in Part II, chap. 5 (p. 211), the status of trade unions as regards their power to undertake strike action had been defined with some precision by the Trade Disputes Act, 1906, and the position of these bodies and, indeed, of the whole Labour movement on the political as well as the industrial side had as a consequence been materially strengthened. The Labour Party in the House of Commons, largely supported by the contributions of trade unions, was increasing its strength and influence under the leadership of J. Keir Hardie, who founded the Independent Labour Party in 1893, J. Ramsay MacDonald, W. C. Steadman and many others. Politically, the Labour movement was split up into three main sections, the Independent Labour Party, the Fabian Society (of which Mr. George Bernard Shaw was a leading member) and the Social Democratic Federation. In 1900 these bodies formed a joint committee for the purpose of contesting Parliamentary seats, and during the next two or three years Mr. D. J. (later Sir David) Shackleton, Mr. Will Crookes and Mr. Arthur Henderson were all elected. After the Taff Vale Judgment it appeared to the leaders of the Trade Union movement that strong Parliamentary representation was essential if the hard-won gains of labour, both in the political and industrial fields, were to be retained. A further attack on the trade unions was not long in coming, and this time it took the form of an action to restrain the Amalgamated Society of Railway Servants from spending any of its funds on political objects. The person who took this action was W. W. Osborne, a member of the Society, and he received sufficient support from those who were antagonistic to the trade unions to take his case as far as the House of Lords which, in December 1909, pronounced the final judgment that a member was entitled to restrain a trade union from using any of its funds for the purpose of maintaining Members of Parliament. The Osborne Judgment cut the ground from beneath the feet of the growing Parliamentary Labour Party because, in the absence of financial support from trade union funds, few of its members would be in a position to seek election or, if elected, to sit in the House of Commons.¹

During the next four years this Judgment handicapped the political activities of the Labour Party, and Parliament during this period was engaged in the constitutional struggle which terminated in the passing of the Parliament Act, 1911. Some mitigation of the difficulties faced by the trade unions at this time in regard to

¹ See Sidney and Beatrice Webb, *History of Trade Unionism*, chap. X, for a detailed criticism of the Osborne Judgment.

their essential political activities came when the Liberal Government granted the concession of a payment of £400 a year to all Members of Parliament. This source of income enabled the trade union M.P. to live once he was elected, but did not overcome the difficulty of finding the money with which to fight the election. Finally, in 1913, the Government was induced to pass the Trade Union Act. This Act gave power to trade unions to include in their constitution, and to spend money upon, any lawful purpose so long as its principal objects were those of a trade union as defined in the 1876 Act.

The Osborne Judgment was the last of the attacks by way of legal action upon the trade unions, and after 1913 their status as representing organised labour was firmly established, including the right of collective bargaining. Opinions differ as to the effect of trade union action upon the wages of those employed, and it is not necessary in a work of this kind to say more than that the organisation of labour, by enabling the workman to bargain rather than merely to accept, has had a definite influence not only on wages but also on hours and conditions of work.

Housing in the Post-war Period

The period following the end of the 1914-18 war was notable in the history of Public Health for a new approach to the problem of housing the poorer members of the community who, under a completely competitive system, had been forced to live in conditions of squalor and overcrowding in the insanitary areas of the industrial towns of this country. It was a simple fact that casual labourers, even when in full employment, did not receive sufficient wages to enable them to pay the rents required for adequate housing accommodation, and, accordingly, they gravitated to the slums where the respectable workman and the man with no ostensible means of livelihood shared a common misfortune. Under the housing legislation of the pre-war period local authorities had the power to demolish insanitary property, subject to full compensation to the owners, to make and carry through improvement schemes and to build houses or tenements to accommodate those dispossessed by these operations. But the exercise of these powers was expensive, because of the obligation to pay full compensation to the owners of demolished slum property, and few local authorities played any prominent part in the housing of the working classes until the third and fourth decades of the twentieth century. Until then housing was pre-eminently a matter for private enterprise, which did succeed in providing reasonably satisfactory dwellings for all

except the lowest income groups. Houses built by private enterprise in urban areas during the period between 1890 and the commencement of the first World War were planned in long rows, with the front door opening directly on the street and having a small yard at the back. They were strictly utilitarian with few amenities, but they fulfilled the minimum sanitary requirements, and they provided accommodation which enabled the families living in them to attain a modest standard of comfort without exceeding the limits of their slender purses. Towards the middle of this period private enterprise went still further and included baths and a small area, surrounded by railings, in front of each house.

Houses of the latter kind, although becoming more numerous in the early years of the twentieth century, sufficed for only a small fraction of the total housing needs of the working classes of the country, and the rents of this class of property, modest as they were, were beyond the resources of the casual labourer and of people of similar status. Insanitary property, as any Public Health official or social worker could vouch, was usually overcrowded, the poor tenant of a house, by the process of sub-letting, often making a handsome profit out of the necessities of those even poorer than himself. Nothing is more astonishing to those who have come into close contact with the lives of the poor than the contradiction between their kindness to each other in one set of circumstances and their ruthlessness in another. Sub-letting is always an evil when it seriously overcrowds housing accommodation, and even under the latest housing legislation it is difficult to regulate. Overcrowding is indicated in the Census returns by the number of persons living more than two in a room ; and in 1911, taking the country as a whole, 9.1 per cent. of the population came into this category and in 1921, 9.6 per cent.

The 1914-18 war, of course, accentuated housing difficulties enormously. During that period the number of families requiring houses increased, but no building of this kind took place, and so little labour could be devoted to repairs that many thousands of dwellings became hopelessly dilapidated. When the war was over and successive governments began to face the problem of housing the people, they were handicapped by the rise in building costs, due partly to a general increase in prices and partly to a reduction in the effort of the building operatives. Rents of newly-built houses were, perforce, much higher than those of property built before the war and subject to the requirements of the Rent Restriction Acts. The anomalies in regard to the fixing of rents of property built under the successive post-war Housing Acts led inevitably to the

device of the subsidy. But the payment of a subsidy on houses built by the local authorities was in any case necessary, as excessive building costs in the years immediately following the war caused economic rents to soar far beyond the resources of even the better paid artisans. The acute housing problems of this period were solved by the institution of the subsidy and by the emergence of the local authorities as bodies responsible for the provision and maintenance of working class houses. Local authorities were not, however, *solely* responsible, as the Housing and Town Planning Act, 1909, had officially recognised public utility societies for housing purposes and this recognition was continued in legislation after the war. Public utility societies were authorised to borrow from the Public Works Loan Commissioners, and they were entitled to the full subsidy in respect of houses for the working classes built by them, either directly from the Ministry of Health or, preferably, through the local authority. Most of the houses built by public utility societies under the Housing Acts of 1919 and 1925 were for the purpose of letting, but the sale of these houses was not forbidden. The long established building societies received a new impetus to their beneficial activities during the third decade of the twentieth century, their encouragement of house ownership amongst persons in the lower income-groups being of great social value.

The Government elected after the war had promised "homes fit for heroes" and in spite of the exceptional difficulties of the times, they set about energetically to meet the demand. An Advisory Council was appointed and housing commissioners were established in all large centres of population to assist, and if necessary stimulate, local authorities to proceed with the task of building houses as speedily as possible. Research was instituted into new methods of building. But demands on the building trade for other purposes besides housing were severe and the trade unions, mindful of past experiences, resolutely refused for some years to allow a sufficient dilution of labour to meet both the needs of housing and industry. Dr. (later Lord) Addison, the first Minister of Health, did his utmost to stimulate house building and under the Housing Act, 1919, 176,000 houses were built. Inevitably, in the circumstances, these were very expensive houses, many costing from £1,000 to £1,200 each, and the subsidy was large, amounting on the average to £1 per week on each house. The need for new houses was, indeed, so urgent that the usual financial safeguards as between a Government Department and local authorities were disregarded and the whole of the subsidy was defrayed by the

Exchequer except for the produce of a penny rate. In such circumstances there was no inducement for local authorities to be careful in accepting tenders for the building of houses, and there was a good deal of extravagance and in some areas serious mismanagement during the first few years after the end of the war. Public opinion demanded houses at any price and both the Government and the local authorities gave way too much to the popular clamour.

Warned by the results of the first housing drive, the Conservative Government in 1923, in the Housing Act of that year, strictly limited the Exchequer contribution to £75 per house in the case of houses of a size suitable for occupation by the working classes and it established the important principle, followed in all subsequent legislation, that the Government's share of the cost of the subsidy on local authority houses should be a fixed sum, any further loss being a charge on the rates. The Labour Government, which assumed the reins of Office towards the end of 1923, appointed Mr. Wheatley as Minister of Health, and he was not slow to recognise that a substantial increase in the number of building trade operatives was essential if an adequate number of houses were to be built within a reasonable period. His contribution to this end was an agreement with the trade unions in which they consented to the admission to the building trade of a sufficient number of new entrants to ensure an output of 225,000 houses per annum by 1934, on the condition that the subsidy should be continued for 15 years. Mr. Wheatley also increased the subsidy, which under the 1923 Act was £6 for 20 years, to £9 for 40 years, thus doubling its value and enabling local authority houses to be let at a rent as low as 9s. per week. The housing legislation of 1923 and 1924 (the Chamberlain and Wheatley Acts) was highly successful and by 1927 the yearly output of houses in England and Wales had reached the figure of 273,000. The Chamberlain Act, 1923, had stimulated building by private enterprise and the Wheatley Act, 1924,¹ encouraged the housing activities of local authorities. Between them, until the subsidy was reduced in 1927, the nation was building houses at a rate which would, if continued, have allowed for a substantial amount of additional housing and, as well, the beginnings of a serious attempt at slum clearance. But the annual number of houses erected after 1927 fell substantially and by 1932 there was a large amount of unemployment in the building trade.

So far, in this section reference has only been made to legislation designed for the purpose of encouraging the building of additional

¹ The Housing (Financial Provisions) Act, 1924.

A Slum Court

CONTRASTS IN
PRESENT DAY
HOUSING

A New
Housing
Estate



houses and nothing has yet been said about the general Housing Act of 1925, a consolidating Act which had as its main object the organisation and procedure for securing the repair, maintenance and sanitary condition of houses. Up to 1925 the "principal Act" for these purposes had been the Housing of the Working Classes Act, 1890 (see p. 217), but this had been added to and amended in various ways since that date by a long succession of Acts of Parliament, including the Housing of the Working Classes Acts of 1894, 1900, and 1903, and the Housing and Town Planning Acts, 1909 and 1919. The opportunity was taken during the preparation of the Bill to insert in the Sixth Schedule the repeal (except for part of section 74) of the 1890 Act and of the 1900 and 1903 Acts, and of the greater part of the Act of 1909, except that relating to town planning, and of much of the 1919 Act. As a result of this effort to consolidate all housing legislation relating to repairs, maintenance and the sanitary conditions of houses, the Housing Act, 1925, was nearly complete in itself, and it was regarded by those whose duty it was to administer it as a useful piece of legislation.

Owing to the cessation of house building during the war and to the difficulties which occurred after it, the question of slum clearance remained in abeyance for many years, and it was not until the nineteen-thirties that serious attention was given to this problem.

CHAPTER 5

EPIDEMICS OF SOME OF THE LESS COMMON COMMUNICABLE DISEASES : SMALLPOX AND VACCINATION

By the second decade of the twentieth century the main infectious diseases which had so much affected the mortality rates during the previous hundred years had been almost, if not entirely, stamped out. Apart from occasional imported cases, typhus, cholera and relapsing fever had disappeared with the abolition of the conditions which favoured their spread, and the enteric group of diseases was decidedly less troublesome than before. In 1911 13,852 cases of these diseases were notified, in 1914 8,778, and in 1916 5,564. Communicable diseases mainly spread by droplet infection, such as diphtheria, measles, whooping cough, scarlet fever and chickenpox, were largely uncontrolled, even by such methods as the use of isolation hospitals, and they continued in their seasons, terminating as a rule when the number of susceptibles in the community had been reduced to such an extent that further spread was impossible. These diseases, with the exception of diphtheria, were not able to produce the same mortality rates as cholera or typhus although their after-effects were often serious. In the case of diphtheria, antitoxin was a weapon of proved efficiency. Apart from smallpox, also largely spread by droplet infection, there was at this period no method available for the production of active immunity against diseases spread by droplet infection. Smallpox of a severe type had declined, very largely as a result of the operation of the Vaccination Acts over a period of 80 years, and the risk of the importation from the Continent of cases of this disease was becoming less, as a similar decline had taken place in all the European countries closely associated with the British Isles. In the years 1914, 1915 and 1916 the numbers of cases of smallpox notified were, respectively, 65, 90 and 149. During the year 1916 small outbreaks of imported plague occurred at the port towns of Liverpool, Bristol and Hull.

During the first 20 years of the century two communicable diseases began to assume importance in the eyes of the epidemiologists because of the increased frequency with which outbreaks occurred. These diseases, both affecting the nervous system, were acute anterior polio-myelitis (infantile paralysis) and cerebro-spinal meningitis (spotted fever). The period 1918-19 was noteworthy for the occurrence of a pandemic of influenza, the most

widespread and fatal in the history of the world, and for the appearance of the hitherto unrecognised disease which received the name encephalitis lethargica.

Anterior Poliomyelitis

This disease, although called infantile paralysis, has its main incidence in children between the ages of one and five; but it also affects children above these ages and adolescents and young adults. It is universally dreaded, not so much for its direct mortality rate, which is not inconsiderable, but because of the permanent paralysis it leaves behind. Frequently the fate of those severely affected is tragic, with lifelong crippling in store for the child or young person unfortunate enough to become infected with this disease. Poliomyelitis is not highly infectious and shows no tendency to spread from one member of a family to another. Caused by a virus, the disease strikes, as it were, at random amongst the child population of a district, choosing one and leaving his fellows alone. In the past its incidence has been low in Great Britain and, generally, in Europe, but high in the United States and Australia.

How long this disease has been occurring in England is not accurately known. One of the first accounts of it is given in a lecture by Dr. Thomas Buzzard in 1898 on the "infective origin of infantile paralysis," and in 1911 Dr. Frederick E. Batten, Physician to the Hospital for Sick Children and to the National Hospital for Paralysis and Epilepsy, gave in a paper to the Royal Society of Medicine an account of the epidemics of this disease so far known in this country. Apart from the cases referred to by Dr. Buzzard, Dr. Batten had noted a number in his own practice in 1902, and as many as 45 in 1904 at the Hospital for Sick Children. Dr. W. W. Treves had observed cases of infantile paralysis in Upminster, Essex, in the summer of 1908; there were cases at Bristol in 1909 and early in 1910; and Dr. (later Sir Leonard) Parsons reported to the Annual Meeting of the British Medical Association held in Birmingham in 1911 that he had seen 32 persons with poliomyelitis in London during 1909. Thereafter the disease was reported more frequently. An epidemic in Carlisle, of which particulars were given by Dr. Joseph Beard, the Medical Officer of Health, commenced in July, 1910, and lasted until November, by which time 33 cases had been observed. Dr. Farrar of the Local Government Board collected details of 83 cases of anterior poliomyelitis in Nottinghamshire and Leicestershire occurring during 1910.

In 1911 an outbreak occurred in Devon and Cornwall with 154 cases between July and September. This outbreak is noteworthy

for the high case mortality of 22.1 per cent. Because of the large number of cases which were being reported all over the country the Local Government Board made acute anterior poliomyelitis a compulsory notifiable disease in September, 1912. According to the Local Government Board's figures, 839 cases were reported in 1912 and the numbers of notifications in 1913, 1914 and 1915 were, respectively, 755, 509 and 517.¹ In 1916 the number of cases notified was 689, and in 1917 this figure had fallen to 357.

Cerebro-spinal Meningitis

This disease, like anterior poliomyelitis, is a disease which increased its incidence markedly during the early years of the twentieth century. Outbreaks of cerebro-spinal fever were first experienced in this country on any large scale during the 1914-18 war and were associated with the overcrowding of military barracks which took place during the earlier period when, owing to inadequate accommodation for troops, the spacing of beds was less than the $2\frac{1}{2}$ feet normally required. According to the reports issued by the Local Government Board the spread of cerebro-spinal fever is also associated with insanitary conditions, and especially lack of cleanliness and ventilation, inclement weather and fatigue. Like anterior poliomyelitis, cerebro-spinal fever is a disease of low infectivity and multiple cases in one household are, relatively, not frequent. Outbreaks of the magnitude of those in the United States and some parts of Europe have never occurred in this country; but there was a strong tendency for the number of cases reported annually to increase especially during the earlier part of the war. Thus, in 1912 there were notified in England and Wales 272 cases, while in 1915 there were 2,343 cases, during 1917 1,393, and during 1918 715.² These were notifications amongst civilians only, but the number of cases recorded as occurring in the Army dropped to a corresponding extent in the last year of the war, no doubt as a result of the precautions it was then possible to take. According to Alison Glover (1920), the Army's success in reducing the incidence of this disease was due to the proper spacing of beds and the allotting of 52 square feet per man in barracks.

Cerebro-spinal fever was made compulsorily notifiable on September 1st, 1912.

¹ Annual Report of the Medical Officer of the Local Government Board, 1915-16, p. 14 *et seq.* The account of the epidemiology of acute anterior poliomyelitis was written by Dr. R. Bruce Low.

² These figures are the corrected figures contained in the Annual Report, 1918-19. They differ slightly from those contained in the previous year's Report.

Encephalitis

In the spring of 1918 a number of cases of an acute cerebral disease, with which was associated some paralysis of the limb muscles and a *characteristic stupor*, occurred in London and a number of the provincial centres of population. These cases were thought at first to be instances of botulism, but further inquiries failed to support this supposition. In 1919 a special inquiry conducted by Dr. Copeman, Dr. Carnwath, Dr. (later Sir Arthur) MacNalty and others, assisted by Professor G. Marinesco, the neurologist of Bucharest, led to the conclusion that this was a hitherto unrecognised disease which, following von Economo, it was decided to designate by the name *Encephalitis Lethargica*.¹ This disease was made compulsorily notifiable on and after January 1st, 1919. During the first three months of 1919, 283 cases of this disease were notified.

Influenza

Although the first information about the great pandemic of influenza which affected this country so severely in 1918 came from Spain—so that the disease at that time was called “Spanish ‘flu””—it appears that premonitory signs of it were showing themselves among troops in training in the United States as early as March of that year. It also occurred in epidemic form in Japan and China in that month, and in April it appeared amongst the crews of the Grand Fleet stationed at Scapa and Rosyth. The disease commenced in a small way in the British Army in France in April and May, but at the end of May it broke out with great violence in the Second Army, shortly after affecting the First and Third Armies and somewhat later the Fourth Army. This epidemic amongst the troops in France reached its height about June 25th, after which a rapid fall in the numbers reporting sick on this account occurred.

Outbreaks of influenza occurred first amongst the civilian population in Glasgow in May and at the beginning of the epidemic all the cases appear to have been mild with an early recovery and no mortality. In June the disease appeared suddenly in many widely separated districts in England, and it seems likely that this extensive spread was due to the presence of many troops on leave. In the week ending November 9th, there were 7,560 deaths from influenza registered in the 96 great towns, and by January 4th, 1919, the autumn epidemic was over, to be followed by another sharp outbreak

¹ A special report on this inquiry was issued—Report to the Local Government Board on Public Health and Medical Subjects, New Series, No. 121—Report of an Enquiry into an obscure disease, *Encephalitis Lethargica*.

throughout the country commencing at the end of January and reaching its peak in the week ending March 1st, 1919. During that week the number of deaths registered as due to influenza in the 96 great towns was 3,889.

The number of actual cases in this country in the two epidemics of 1918 and 1919 is not known; but it would appear that the case mortality rate amongst the civilian population was low, being not more than 1 to 3 per 1,000. The large number of deaths which actually occurred was due to the magnitude of these epidemics, affecting, as they did, many hundreds of thousands of the population. In Manchester, on the basis of an inquiry covering 1,018 houses with a population of 4,666, conducted by Dr. James Niven, the Medical Officer of Health, it was estimated that 25 per cent. of the population was attacked.

As regards total deaths, the official figures show that in the last 11 weeks of 1918 in the 96 great towns the number of deaths from influenza was 44,537 and in the first 13 weeks of 1919 18,278. This gives a total of over 62,000 deaths in an urban population which was then about 16,577,000.

It was evident from the beginning of this epidemic that there were no known methods of prevention available, and that all that could be done by local authorities was to provide such treatment facilities as it was possible for them to organise with the limited resources at their disposal. Hospital accommodation was, of course, insufficient to take the vast number of cases of influenza occurring in each area and, on the advice of the Local Government Board, local authorities in many cases did their utmost to provide home nursing and to alleviate distress in other ways. Home nursing arrangements and the provision of domestic help were much facilitated by the willing co-operation of voluntary societies and of many individuals.

During the two epidemics much intensive research, mainly under the auspices of the Medical Research Committee, went on in an attempt to ascertain the causative organism of this disease. The part played by the bacillus discovered by Pfeiffer in 1892 in the production of influenza was extensively investigated as was the share taken by other organisms in the clinical evolution of the disease. It was already suspected that the organism responsible for influenza might be a filterable virus, but the methods of investigating viruses were then still elementary and a number of years were to elapse before C. H. Andrewes, Laidlaw, Stuart Harris and others, utilising ferrets which were found capable of being infected with influenza, were able to prove that the causative organism was indeed a virus.

These workers, between 1933 and 1935, succeeded in conveying the disease to ferrets by the intranasal instillation of material from human cases, and proved that the animals which recovered were immune for three months.

Rabies

From the epidemiological point of view the later part of the year 1918 is interesting on account of the presence of rabies occurring amongst dogs in Plymouth. This disease in dogs, from which human beings may be infected with hydrophobia, had occasioned little trouble in England since an outbreak lasting from 1897 to 1902, which was said to have been ended by Mr. Walter Long's¹ policy of enforcing the muzzling of dogs and prescribing a long period of quarantine before these animals were allowed to be imported into the country. The 1918 outbreak of rabies was reported to the Local Government Board by the Ministry of Agriculture and Fisheries in September, and measures were immediately taken for the treatment of any persons bitten by dogs suffering from this disease to be undertaken at the Pasteur Institute in Paris. "During September and October, 21 persons from Devon and Cornwall received treatment in Paris. Twelve of these travelled as a party under the charge of Dr. Sophia Seekings-Friel, a temporary member of the Board's Medical Staff."² In November, 1918, the Local Government Board decided to open a treatment centre in Plymouth, antirabies material being obtained monthly from the Pasteur Institute. Early in 1919 cases began to be discovered in South Wales and a little later in Surrey, and a second treatment centre was opened at St. Thomas's Hospital, Sir David Semple acting as consultant. Later, new centres were opened in Cardiff, Birmingham, Manchester and Newcastle-on-Tyne.

Anthrax

As may be understood from the brief accounts given in this book of outbreaks of communicable diseases, there is no end to the number of ways in which organisms may be spread. Micro-organisms vary to a great extent in their power of causing disease in man and animals, and many which exhibit a high degree of virulence towards animals are harmless to

¹ Annual Report of the Medical Officer of the Local Government Board, 1918-19, p. 76.

² *Ibid.*, p. 77.

man and *vice versa*. The anthrax bacillus is, however, highly virulent to man and to many animals, including cattle, sheep and goats. We have already referred to the danger to operatives in the mills in Yorkshire arising from infected mohair (p. 130), and a similar danger arises whenever the hides, hair or wool of infected animals are used in manufacturing processes. Disease from the anthrax bacillus, which may take several forms, usually affects operatives in the various industries using this kind of raw material, but a few instances have occurred in which the consumer of the goods has been the sufferer.

This was the case in 1919, when a number of persons suffered from malignant pustule in the face, due to infected shaving brushes imported from Japan. In the following year a few more cases, arising from this cause, were reported. In one of these cases the infection was derived from a brush made in England from imported materials.

The dangers arising from imported goat hair and other materials were stressed in the report of the Anthrax (Disinfection) Committee which made recommendations in regard to the compulsory treatment of wool and hair coming from countries such as India, Turkey and Russia where anthrax is a common disease in animals. As a result of this report, the Home Office in 1921 set up the Wool Disinfecting Station in Liverpool. Certain materials such as imported goat hair are compulsorily disinfected at the Station, and wool, horse hair, cow hair, etc., may be treated at the request of manufacturers. In the process devised by G. Elmhirst Duckering, the first Director of the Station, hair and wool pass through cisterns containing, successively, soda, soap solution, formaldehyde and, finally, water. A careful bacteriological check is made of samples of materials after treatment.

Some Considerations relating to Smallpox and Vaccination

In a previous chapter (p. 289) an account was given of the large outbreak of smallpox which began in this country in 1901. What was noteworthy about this epidemic was that it had died down completely by the end of 1906 and had scarcely left a trace behind it. From the end of the year 1906 up to the present day, the amount of severe smallpox (*variola major*) in any period has been very small, and such outbreaks as have occurred were mainly due to imported cases which had escaped through the net of the port sanitary authorities. There are, of course, partial explanations of this fact, and the attention of epidemiologists has been called to the growing vigilance of the port sanitary staffs, the marked reduction in the

amount of smallpox on the Continent, and the increased efficiency and experience of the Medical Officers of Health of the inland towns.¹ During the earlier years of the twentieth century the proportion of vaccinated infants was declining and, until the war, the vaccinal state of the population was worse than it had been for nearly 50 years. In the 1914–18 war about seven millions of the people of this country—mainly adult males—were vaccinated during their service in the Forces, and it seems certain that the protection thus afforded to men who were campaigning in areas where smallpox was prevalent, prevented the importation of this disease into Great Britain.

Although no method of treating smallpox was discovered during this period,² an important advance in the diagnosis of the disease was made by Thomas Frank Ricketts (1864–1918). Ricketts—the most important name in the history of smallpox since Jenner—became Medical Superintendent of the London Smallpox Hospital at Dartford in 1892 and, later, was in charge of the Metropolitan Asylums Board's Smallpox Hospitals and River Ambulance Service, and he spent practically the whole of his professional life in dealing with patients suffering from this disease. According to Wanklyn³, Ricketts was a man of the most remarkable ability, but his great gifts were masked by an equally remarkable unassertiveness. His great contribution to the study of smallpox was published in 1908, but his method of diagnosis had been used by himself and his pupils for many years before it was given to the world.⁴ Ricketts' own account of the results of a method of diagnosis based upon the distribution on the body of the smallpox lesions is as follows :—
“Smallpox is a disease which in practice seems to present more difficulties in its detection than do most others; it is the disease in which mistakes are of most moment; and yet it is, perhaps, of all diseases that in which a certain diagnosis can be arrived at in almost every case.” Ricketts' discovery has become common property to those whose duty it is to deal with infectious diseases, and it has been the means of cutting short many epidemics of smallpox and of saving numerous lives. To Wanklyn particularly is due the credit

¹ For a further discussion of the causes of the virtual disappearance in the early part of the twentieth century of endemic variola major in this country, see p. 293.

² No specific method of treatment for smallpox has been discovered. Penicillin and the sulphonamides have been tried without any particular success.

³ Wanklyn, W. McConnell, *A Survey of the Present Position of Smallpox and Vaccination*, 1922.

⁴ Ricketts' famous book *The Diagnosis of Smallpox*, illustrated by his colleague, Dr. J. B. Byles, was published in 1908.

of teaching the Public Health Service in this country the proper methods of diagnosing smallpox and of controlling its spread.¹

Vaccination has been the subject of more controversy than any other procedure used by the medical profession. As a result of opposition to vaccination on the part of many influential persons, the Acts dealing with this subject were progressively weakened until, in 1907, exemption could be obtained by the parents of any child by a simple declaration before a magistrate. Some of the objections to vaccination, even in the medical profession itself, arose from an imperfect appreciation of this method of producing artificial immunity *and of its limitations*. Jenner was seriously in error in supposing that vaccination conferred a life-long immunity against smallpox. The Local Government Board recommended re-vaccination, and it has been generally agreed in official circles for many years that at least a second and, if exposure to cases of smallpox is expected, a third vaccination is necessary. Infant vaccination could not therefore be expected to produce an immune adult population.

There is another objection to infant vaccination which merits more consideration. It is a view which was promulgated by Dr. J. H. C. Dalton of Cambridge in 1893, but it has since been adopted by Dr. C. Killick Millard,² the late Medical Officer of Health of Leicester, who has for many years expounded it with great ability. The argument which Millard uses is directed against infant vaccination on the ground that it makes subsequent smallpox so mild as to be unrecognisable, so that there are many missed cases. Millard is convinced of the efficiency of recent successful vaccination to render an individual immune against smallpox; and, on one occasion, he had the courage to take his own vaccinated children into a smallpox hospital and have them photographed standing near to cases of the disease. But he has emphasised on many occasions on public platforms and in the medical press, that infantile vaccination, with waning immunity, is one thing and recent vaccination—such as the vaccination of contacts in the course of an epidemic of Asiatic smallpox—quite another. The first he regards as disadvantageous; the second he fully approves. In his view infant vaccination does not have any effect in protecting the community against smallpox. Instead, he believes that an epidemic of smallpox in an unvaccinated community—like Leicester—can be

¹ Wanklyn, W. McConnell, *The Administrative Control of Smallpox and How to Diagnose Smallpox*.

² See Article by Dr. C. Killick Millard in the *Lancet* (1924, p. 301), entitled *Smallpox and Vaccination*. This was in reply to an address given to Members of Parliament on July 25th, 1923, by Dr. J. C. McVail.

effectively controlled by the vaccination of contacts, and, of course, the isolation of patients.

McVail and others strongly dissented from Millard's point of view and the controversy on the desirability, or otherwise, of infant vaccination has gone on for many years. McVail sums up the arguments in favour of infantile vaccination, as against Millard's thesis, as follows :—" But to discourage vaccination in order that the unvaccinated individual may have an easily diagnosable (therefore possibly fatal) attack of smallpox seems to me a proposition contrary alike to the principles of medical ethics and to the interests of the public health."¹ This controversy became largely centred, during the 'twenties, on the need for vaccination—even of contacts—in the face of epidemics of American smallpox (*variola minor*), a disease causing mild symptoms and little systemic disturbance, which became very prevalent at that time. Epidemics of *variola minor* were in practice very difficult to control as the number of missed cases was large. Moreover, the patient, feeling very well after the first day or two, often went about his business, mixing with his fellows and spreading the disease. Vaccination is a protection against the American variant of smallpox just as it is against *variola major*, but there were many who argued that it was unjustifiable to use this weapon against such a mild disease since vaccination was more unpleasant and involved more risks than the disease itself.

The years during which *variola minor* was prevalent in this country date from 1922. In that year the number of cases of this disease was 973 and the annual number of notifications had increased up to 14,767 by 1927, gradually falling until 1935, when the epidemic disappeared. During this period the fatality rate per 1,000 cases fluctuated between 1.68 and 4.27. This type of smallpox continued to breed true and showed no signs of increasing virulence. During the period when *variola minor* was prevalent, however, an interesting event happened. On April 1st, 1928, *variola major*—the severe form of the disease—was introduced through the port of Liverpool into the country from India by the s.s. " *Tuscania*." " These cases presented an entirely different clinical picture from that to which the public has lately become accustomed. They were marked by profound prostration, haemorrhage into the skin and a confluent eruption; within 10 days 11 cases proved fatal."² Altogether, in this epidemic within an epidemic, there were 35 cases and 11 deaths.

¹ McVail, J. C., *Half a Century of Smallpox and Vaccination*, 1919, (Milroy Lectures), p. 43.

² Annual Report of the Chief Medical Officer of the Ministry of Health, 1929, p. 71.

Before the end of May this outbreak had been suppressed by the Public Health Service, employing the usual methods of isolation of cases and the vaccination of contacts. The epidemic of variola minor which, because of its low death rate, occasioned no alarm amongst the population, continued the even tenor of its way, unaffected by the short visitation of its more dangerous relative.

Epidemics of variola minor presented serious difficulties to the Medical Officers of Health of the areas affected. Notifications by no means covered all the cases as many persons, only slightly ill, never saw a doctor at all. The system of notification fails completely as a Public Health measure when the disease is so mild that the patient is ambulant almost at once, and finds no need to obtain medical advice. In view of these difficulties, the Ministry of Health, in 1931, made some modifications in the measures to be taken by sanitary authorities when an outbreak of variola minor occurred.¹ These modifications abolished the stereotyped procedure which it had been customary to follow in the face of an outbreak of variola major—except vaccination—and left it to the discretion of individual Medical Officers of Health to adopt such measures as they thought appropriate to the circumstances of any epidemic of this disease. The disappearance of variola minor was not, in any special way, due to specific action taken by the Ministry of Health and the local authorities. The virus causing the disease seems to have gradually lost its virulence, and therefore its power to cause an epidemic.

As has been remarked, the scattered epidemics of variola minor died out in the 'thirties, and a number of years passed by during which no cases of indigenous smallpox were notified in this country. But not only did smallpox disappear, but the many controversies about it, and the protective methods used against it, seemed to disappear also. Even the perennial dispute about the aerial transmission of the disease over considerable distances, prominent as a source of controversy in the earlier years of the century, was not revived. The fact was, of course, that in the absence of actual danger from smallpox, interest in the subject had disappeared. The disputants had "sheathed their swords for lack of argument." But although there was little of the general interest which so often and so naturally leads to controversy, some scientific enquiry was undertaken in the 'twenties into the risks which might be incurred as a result of vaccination, especially in the case of the adult. It had been known for many years that in a small proportion of those

¹ *Appreciation of the present position of smallpox*, Ministry of Health, February, 1931.

vaccinated there occurred lesions of the central nervous system which gave rise to a more or less severe form of encephalitis. The recommendations of the Royal Commission of 1889–1896 had presaged great reforms in the national system of vaccination, incorporated in the Vaccination Act and Order of 1898. But, in spite of these reforms, cases of disease of the central nervous system, following vaccination, continued to be reported.

In 1926 the Minister of Health, in conjunction with the Medical Research Council, appointed a Committee of experts to enquire into and report from time to time upon such matters as the preparation and standardisation of vaccine lymph, the methods of vaccination to be used, and the possibilities, in the light of modern knowledge, of removing any of the risks attendant on vaccination. Similar inquiries were being made in other countries. The Committee, of which the Chairman was Sir Humphrey Rolleston, the then President of the Royal College of Physicians, and the Secretary Dr. J. R. Hutchison, of the Ministry of Health, issued its first Report in 1928, and its Final Report in 1930. The main recommendations in the first Report were as follows :—

- (1) In place of the officially advocated four insertions (in vaccination), trial to be made of one insertion with a minimum of trauma.¹
- (2) Primary vaccination to be performed in infancy, and re-vaccination to be offered when a child enters school (5 to 7 years) and again on leaving (14 to 16 years).
- (3) Vaccination in multiple insertions to be available for such persons as desire to secure the maximum protection against smallpox obtainable at one operation.
- (4) Experimental observations to be made to ascertain if it is feasible to further increase the dilution of vaccine lymph without impairing its efficiency.
- (5) Experimental investigations to be continued with a view to the furtherance of knowledge of vaccinia and of the virus diseases in general, with special reference to the pathogenesis of the nervous complications which occasionally follow those diseases.

Some of these recommendations, notably that relating to the method of vaccination by one insertion with the minimum of trauma,

¹ The previous practice was to scarify the skin so as to secure a vesicular surface of $\frac{1}{2}$ sq. inch. Using this method the amount of trauma, and the consequent risk of sepsis, was considerable. On the other hand it has been argued by some, including Marson and Hanna, that this method gave the highest, and probably the longest-lived, protection against smallpox. This is, however, by no means certain.

were incorporated in the Vaccination Order, 1929; investigations were undertaken by Dr. (now Professor) S. P. Bedson into the possibility of using inactivated vaccinia virus in place of the living virus; and Professor W. E. le Gros Clark, at the request of the Committee, undertook a research into the routes by which infections may pass from the nasal cavities into the brain.¹

It was hoped by the Committee that the practice of one insertion, coupled with a possible dilution of the lymph used, would be sufficient to prevent the occurrence of cases of post-vaccinal encephalitis. In the Report issued in 1930 an attempt was made to investigate the causation of the 90 cases of post-vaccinal encephalitis which had been reported during the two years ended September 30th, 1929. In connection with these cases there was a certain amount of geographical grouping, 42 out of the 90 coming from Bristol, Stoke, Kingston, Wareham and West Ham, but the remainder were widely scattered. All the cases of this condition occurred in children and adults and none in infants, and followed, in nearly all, a primary vaccination. There was nothing, however, in the nature of the lymph used or in the number of insertions, to differentiate the cases in which post-vaccinal encephalitis occurred from those who sustained no ill effects from vaccination. After careful investigations, conducted under the supervision of Dr. Bedson, it appeared to be unlikely that it would be found possible to confer solid immunity against smallpox by the use of a vaccine inactivated either by heat or by chemical agents such as phenol and formalin.

The Public Health Laboratories

Some reference has already been made in an earlier part of this book (p. 311) to the importance attached to medical research, in the first place by Simon and later by his successors. Until after the end of the century work of this kind was conducted in hospital or university laboratories, and some of the cost of that part of it which was related to Public Health was met by subsidies from the Exchequer on the recommendation of the Local Government Board. Rapid developments in the new science of bacteriology in the 'eighties and 'nineties opened up new vistas for the medical research worker and, at the same time, lent emphasis to the importance of this new subject in connection with Public Health. Before long bacteriological investigations of water-supplies and milk came to be a routine Public Health procedure undertaken

¹ Professor le Gros Clark's Report on this subject was published by the Ministry of Health in July, 1929.

as an ordinary precaution and not solely as a method of combating the epidemics spread by these agencies.

As bacteriological techniques improved in the hands of such investigators as Klein, Houston, Sheridan Delépine, Boyce, Gordon, Cobbett and Savage so the need for local arrangements designed to make use of the newly acquired knowledge about the transmission of communicable diseases became more manifest. It became necessary to provide for the examination of throat swabs for diphtheria bacilli or sputum in cases of suspected pulmonary tuberculosis, to undertake agglutination tests in connection with typhoid, to inoculate guinea-pigs in order to determine the presence or absence of tubercle bacilli in milk and to carry out many other procedures of a similar kind. Public Health began to depend more and more for its efficient performance on the laboratory. Nevertheless, in spite of the need, the establishment of Public Health laboratories during the first quarter of the twentieth century was exceedingly slow. Some of the larger cities, especially those associated with universities, made satisfactory provision for the examination of specimens from their Public Health departments either by arrangement with the local university or by setting up a full-scale laboratory of their own under a pathologist of standing. But in many parts of the country the arrangements were of a primitive kind, being often confined to a postal service with a hospital laboratory, which undertook this work purely as a means of augmenting income and showed little real interest in it.

The development of the Venereal Diseases Service from 1916 onwards might have provided a stimulus to the establishment of many more Public Health laboratories, and would probably have done so but for the war and the absence of a large number of medical practitioners on active service abroad. This opportunity was, perforce, missed and the large amount of new bacteriological work required under the Venereal Diseases Regulations went to universities and hospitals, where, in a routine way, it was usually adequately performed. Wilson says of the working of the Public Health bacteriological service in the years following the first World War: "The relation between the epidemiologist and the bacteriologist were broken, methods became stereotyped, and examinations were performed without submitting their rationale to continual critical revision," and he makes the still graver criticism that "Little or no research was undertaken, and the numerous problems thrown up by the routine material were left untouched."¹

¹ Wilson, Prof. G. S., *Journal of the Royal Sanitary Institute*, July, 1948, p. 221.

All this was doubly unfortunate, as advances of a most important character were made in the period between the two wars. In that fruitful era, for example, Bruce White and Scott, working at the Ministry of Health's laboratory, made marked progress in our understanding of the antigenic structure of the *Salmonella* group; Fred Griffith introduced a serological method of classifying haemolytic streptococci; McLeod and his colleagues at Leeds University succeeded in differentiating between the various forms of the diphtheria bacillus; and Felix and Pitt discovered an additional antigen of the typhoid bacillus which they called the Vi antigen. These discoveries, potentially of great value in the elucidation of Public Health problems, were inadequately used except in those few areas where efficient bacteriological laboratories had been established.

On the other hand, the work of the Central Pathological laboratory, at first under the Local Government Board and later under the Ministry of Health, was of a very high order both in the field of research and of routine investigation. It had been established by the Local Government Board in 1910 and its first major task under Dr. Arthur Eastwood, who was in charge from the time of its inception until his retirement from the service of the Crown in 1933, was to continue the work of investigation into tuberculosis, previously undertaken by the Tuberculosis Commission (pp. 260-2). As time went on, the laboratory, situated first at Carlisle Place and afterwards at Endell Street, began to undertake other work of research and investigation. Dr. F. Griffith was associated with Dr. Eastwood in the work of the laboratory from its inception and Dr. W. M. Scott was appointed to the staff in 1915.¹

Carriers

In a much earlier chapter of this book (pp. 69-70) an account was given of the varying views of our Public Health predecessors in regard to the causation and transmission of the large number of communicable diseases which made life so unpleasant and so

¹ Annual Report of the Chief Medical Officer of the Ministry of Health, 1932, p. 183. Griffith and Scott died as a result of enemy action in April, 1941. Their deaths "dealt a severe blow to the service in view of their unsurpassed knowledge and experience in the field of bacteriology as applied to preventive medicine." Sir Wilson Jameson, Report 1939-45, p. 5. Many of the inefficiencies in the pre-war laboratory service, to which reference is made in this section, may be expected to be remedied by the Public Health Laboratory Service, established under the National Health Service Act, 1946. This is a development of the Emergency Public Health Laboratory Service, planned by the late Prof. W. W. C. Topley and subsequently directed during the war by Prof. G. S. Wilson.

dangerous in the urban areas of this country until late in the nineteenth century. During that period, life for the vast majority of the manual workers in the towns was indeed—to quote Hobbes—nasty, brutish and short. Our ancestors had their pet theories of the origins of infectious disease, founded largely on experience and not on scientific observation. We have already remarked (p. 40) that one of their main difficulties in accepting the theory of contagion was that in its original form it did not explain the ebb and flow of epidemics, about which, even today, much remains to be discovered. If, for example, cholera or typhoid was caused by a living organism of a microscopic size what happened to it when there were no cases of the disease? In the days when the medical profession was less skilled than it is now, when modern aids to diagnosis were not available and when, moreover, there was no notification of infectious diseases, it was difficult for the central government or the local authorities to secure an accurate picture of the epidemic situation in any given area. They could not be sure that, for example, there were no *cases* of typhoid in borough A, but their sources of information were at least sufficient to say with a fair degree of certainty that there had been no *deaths* from that disease during a particular period of time.

If there had been no deaths from typhoid over a period of some weeks it was a fair assumption, dealing with a disease of such fatality as typhoid, that there had been no cases and that the area was clear from infection. What explanation could there be if, in a closed community, a small epidemic suddenly occurred, as it were out of the blue, after there had been no cases to act as infecting agents for a considerable period?

The conception of the existence of “carriers” of the organisms causing communicable diseases, which we owe to the bacteriologists, began to creep into the literature during the first few years of the twentieth century, and it led to outstanding advances in our knowledge of the origins and transmission of infection. By demonstrating that it was possible for an ostensibly healthy person to carry the organisms of typhoid, diphtheria and a number of other diseases over a period of weeks or years and transmit them, by various means, to other persons, the bacteriologists made a discovery of great importance to preventive medicine.

One of the very early conceptions of the carrier state as applied to typhoid fever was contained in the description of it given by Horton-Smith in 1909—“We must allow, then, that so far there is no proof that the typhoid bacilli can multiply outside the human body. Our increasing knowledge of typhoid fever, too, enables,

us to explain satisfactorily many outbreaks of the disease without such an assumption. Thus, it is fully established that a person may, though apparently restored to health, remain infectious for months and years after an attack of the fever—a fact in itself sufficient to account for many outbreaks of the disease.”¹ Faecal carriers of the typhoid organisms first came to light as a result of an investigation undertaken under Koch’s auspices (1902), to determine the value of hygienic measures (disinfection of excreta and isolation of patients) in checking the progress of an outbreak of this disease. This discovery was recognised throughout the world as being of great value as sufficing to explain the occurrence of many epidemics, and as indicating methods which could be used for the control of the typhoid carrier and the prevention of the infections caused thereby.

During the first quarter of the twentieth century the presence of the carrier state, either acute or chronic, was discovered in connection with a number of diseases including, besides the enteric group, diphtheria, cerebro-spinal meningitis, bacillary dysentery, pneumonia and poliomyelitis.

Of these diseases the most important from the epidemiological point of view, because of its extreme prevalence and its high fatality, was diphtheria. Research into the characteristics of this disease has been concentrated mainly on methods of immunisation (pp. 420–1) and methods of spread. As regards the latter it may be sufficient to mention an important paper published in 1923 by Surgeon-Commander Sheldon F. Dudley (later Surgeon Vice-Admiral Sir Sheldon Dudley). In this paper, written as the result of extensive investigations into the incidence of diphtheria at the Royal Naval School, Greenwich, Dudley shows, *inter alia*, that spread is usually from case to case by chains of contact carriers.² Some general principles underlying the transmission of infectious diseases of the “droplet infection” type were enunciated by Dudley in 1926, also based on investigations at the Royal Naval College, in reporting upon which he expanded the concept of the “velocity of infection,”³ referred to in his previous paper. On the subject of herd-immunity and its relation to the introduction of new elements of population, the results obtained by Dudley were in

¹ Medical Research Council—Special Report Series, No. 179, 1933, *Chronic Enteric Carriers and their Treatment*, p. 7.

² Dudley, Sheldon F., *The Schick Test, Diphtheria and Scarlet Fever*, Medical Research Council—Special Report Series, No. 75, 1923.

³ Dudley, Sheldon F., *The Spread of Droplet Infection in Semi-isolated Communities*, Medical Research Council—Special Report Series, No. 111, 1926.

accord with the conclusions later reached by Topley and Greenwood, using as their experimental material colonies of mice.¹

¹ For a full discussion of herd infection and herd immunity, with an account of a number of experimental studies of these subjects undertaken by Greenwood, Topley, Wilson and others, see Topley and Wilson's *Principles of Bacteriology and Immunity*, Vol. II, chap. 56. The most important paper on this subject is that by Greenwood, Bradford Hill, Topley and Wilson entitled *Experimental Epidemiology*, published in the Medical Research Council's Special Report Series, No. 209, 1936.

PART V

MODERN PUBLIC HEALTH AND SOCIAL MEDICINE, 1929-39

Some account has been given in various chapters of this book of the different changes in the administration of the Poor Law which took place during the later years of the nineteenth century and the early part of the twentieth. Notwithstanding the developments in social insurance which Parliament had brought about in the first two decades of the twentieth century, the Poor Law was still the most important of the social services. It was the last refuge of the destitute, and its system of hospitals provided in-patient treatment for a large proportion of the sick in this country. No action was taken to implement the main recommendations of the Royal Commission on the Poor Law until 1929, 20 years after the voluminous report of that body had been presented to Parliament.

This part of the book commences with the passage of the Local Government Act, 1929, and it ends with the outbreak of war in 1939. The Local Government Act effected great changes in the administrative structure of the Poor Law by transferring all the functions of the Boards of Guardians to the major local authorities, and it may perhaps be regarded as a landmark in the history of Public Health because the date of its coming into force ushered in the new policy of association between Public Health and hospitals. In the sphere of the social services this period from 1929 to 1939 is marked by the establishment of the Unemployment Assistance Board, rendered necessary by the worst period of trade depression in the history of this country.

The Personal Health Services attained a very high standard of efficiency during the period from 1929 to 1939. In particular, during the 'thirties, prolonged investigation took place into the subject of maternal mortality. A declining birth rate was matched by a steadily decreasing death rate. Apart from unemployment, which for a number of years assumed serious dimensions, the social conditions of the people were better than ever before in our history. One of the triumphs of the inter-war years was the success of the housing drive which provided newly-built accommodation for about 16,000,000 persons. During the three or four years before the outbreak of war a nation-wide attack on the slums was undertaken. Progress was already considerable by 1939, and but

for the war this age-long menace to the health of the poorer classes in the community would have been overcome.

Chapter 4, which ends the book except for the Epilogue, deals with a number of miscellaneous matters, bringing this history of Public Health down to the year 1939.

CHAPTER 1

CHANGES IN THE ADMINISTRATION OF THE POOR LAW: UNEMPLOYMENT

Even in the years following the end of the first World War the Poor Law continued to exist as it had been in the nineteenth century, unchanged and, to all appearances, unchangeable. In the midst of war the controversy on the basis of the national system for the relief of destitution, aroused by the publication of the Majority and Minority Reports of the Poor Law Commission, had died down and a number of years were to elapse before it was revived again.¹ The trade slump in the early years of the third decade of the century, with its consequent unemployment, was carried by the Unemployment Insurance system with recourse to the Poor Law when contributors passed beyond the period of benefit. Labour Exchanges, set up under the Labour Exchanges Act of 1909, were of benefit in providing a limited remedy for the mal-distribution of labour during periods when total employment in the country was relatively satisfactory. But the Labour Exchanges, while efficiently organised for the purpose of directing the flow of workers into jobs which already existed, were quite helpless to create opportunities for work when the number of vacancies fell below the number of those seeking them. One of the Ministry's difficulties was the fact of the comparative immobility of labour and this problem, of which a solution has not yet been found, was especially prominent in the earlier years of the 'thirties, when the full aftermath of the war of 1914-18 showed itself in stagnation of trade, a financial crisis and wholesale and prolonged unemployment (p. 396). It seems likely now, in the wisdom which so often comes after the event, that statecraft in this country could have done more to avert the worst consequences of the dislocation of international trade which occurred during that period; but much of the blame for the poverty and unemployment which were then widespread in almost all countries, including the United States and Germany, rests upon the shoulders of those who were responsible for the war.

¹ The Local Government Committee, under the Chairmanship of Sir Donald Maclean, recommended in 1918 the abolition of Boards of Guardians and the transference of their functions to counties and county boroughs. The Royal Commission on Local Government, under the Chairmanship of Lord Onslow, sat from 1923 to 1929.

Although the Poor Law, in its legislative aspects, remained virtually unchanged, an alteration in the administration of the system occurred in 1929, when the Local Government Act of that year was passed. It will be remembered (p. 281) that one of the main recommendations of the Majority Report of the Royal Commission on the Poor Laws, 1909, was that the administration of relief should be transferred from the Guardians and placed in the hands of Public Assistance Committees operating in the areas of county councils and county boroughs. (The Minority Report did not disapprove of this recommendation but it went very much further). The abolition of the Boards of Guardians, effected by the Local Government Act, 1929, not only made it possible to transfer the ordinary Poor Law functions to the counties and county boroughs, but it also transferred to these bodies a vast system of hospitals and institutions in which a large proportion of the in-patient treatment of the sick was being carried on. This was therefore a major change, not only in the Poor Law, but also in the structure of the Public Health Service. Up to the coming into force of the Local Government Act, local health authorities had possessed fever hospitals or sanatoria, but the in-patient treatment of persons suffering from other types of diseases had been conducted either in voluntary or Poor Law hospitals.¹ From 1st April, 1930, the date on which the Act came into operation, the councils of counties and county boroughs assumed responsibility for the administration of all the diverse types of hospitals which had been evolved and developed by the Guardians during a period of nearly 100 years.

On June 29th, 1928, the Government published a White Paper on its proposals for "reform in local government and in the relations between the Exchequer and local authorities." In regard to the latter part of the subject, the Government's policy included derating of industrial and agricultural hereditaments, and to compensate local authorities for the loss this would entail it was proposed to introduce a new block grant in substitution for the percentage grant system then in force. The block grant was to be based upon a formula which would take into account in each area the percentage of children under five, the amount of unemployment and the rateable value per head of population.

The second reading of the Bill was taken in the House of Commons on November 27th, 1928, when it was criticised by

¹ Until 1930 the only English local authority possessing general hospital accommodation was the Bradford City Council, a most progressive municipal corporation, which acquired the St. Luke's Hospital in 1920.

Labour members because it left the Poor Law system intact, changing only the administrative machine. It became law as the Local Government Act on March 27th, 1929.

The new Act effected a number of transformations in the machinery of local government, some of fundamental importance and others relating to matters of administrative detail. Those changes which affected, directly or indirectly, the Public Health Service are as follows :—

- (a) It transferred, as from the appointed day, the functions of Poor Law Authorities to the councils of counties and county boroughs.
- (b) In particular, it transferred from the Boards of Guardians to such authorities duties in respect of infant life protection under Part I of the Children Act, 1908, and of vaccination under the Vaccination Acts.
- (c) It provided for the constitution by each council of a Public Assistance Committee to which all matters (with some exceptions) relating to the functions transferred under the Act should be referred.
- (d) In addition to the ordinary functions of the Boards of Guardians relating to the relief of destitution, the Local Government Act transferred to the councils of counties and county boroughs duties in regard to the registration of births, marriages and deaths.

Other changes brought about by the Act in the sphere of local government administration, but which were not concerned with Public Health, were the transfer of responsibility for main roads in county areas to the county councils, the total exemption of agricultural land and buildings from rates, and the relief from rates in respect of industrial and freight-transport hereditaments.

Such were the legislative changes brought about by the Local Government Act, 1929. It remained to be seen to what extent local administration could be made to conform to the intentions of the framers of the Act. The Act was indeed drafted in such a way as to leave much discretionary power (as, it may be suggested, was proper) in the hands of the major local authorities. Used to full advantage, this important piece of legislation could bring about great and beneficial changes in the organisation of the local Public Health Services; treated as a formality without regard to the principles on which it was based, the Act could be brought into operation without any substantial alteration in the administration of either the Poor Law or of Public Health. Nevertheless, there were plain indications, both in the Act itself and in the important

circular issued by the Ministry of Health in 1929, as to the principles on which it should be brought into operation in each area. The first principle of this kind in the Act itself occurs in the fifth section where it is laid down that councils should have regard to the desirability of securing that certain types of assistance which could be provided either by way of poor relief or, alternatively, through specified Acts relating to Public Health, should be provided in the latter and not the former way. This sounds, perhaps, a little cryptic and requires some explanation. Prior to 1930, when the Act came into operation, many functions, now regarded as belonging properly to the domain of Public Health, were carried out both by the Public Health Service and the Poor Law. Thus the Boards of Guardians provided services in connection with maternity and child welfare, tuberculosis, blind persons and mental deficiency under the Poor Law Acts, while local health authorities possessed similar powers and duties under such legislation as the Public Health Act, 1875, the Mental Deficiency Act, 1913, the Maternity and Child Welfare Act, 1918, the Blind Persons Act, 1920, and the Public Health (Tuberculosis) Act, 1921. This duplication and overlapping of functions occasioned by the possession of very similar powers and duties by two completely separate systems of authorities, it was the object of the Local Government Act to abolish. The method by which duplication of function was to be abolished as between the Poor Law and the Public Health Service was the requirement that local authorities should declare in their administrative schemes that, wherever practicable, they intended to provide assistance under the appropriate Act and not by way of poor relief. A "declaration" of this kind by a local authority might be extended to cover the administration of Poor Law hospitals by the Public Health Committee instead of the Public Assistance Committee, and this would result in these hospitals coming under the supervision of the Medical Officer of Health, who was already responsible for sanatoria and fever hospitals and for the other Public Health Services in the area. If the transfer of Poor Law hospitals to the Public Health Department in a particular area could be effected, important consequences would follow. For the first time in history Medical Officers of Health would have responsibility for a Hospital Service and a Public Health Service, and the opportunities for co-operation between these two branches of the same Department would be almost endless.

Sir George Newman in the Annual Report for 1928, published in 1929, made some wise observations on this and other aspects of the administration of the new Act and he repeatedly referred to the

great opportunities which were shortly to be available to local authorities for the improvement of their expanded services. "Above all, full use should be made of the opportunity for co-ordinating the transferred functions with the Public Health activities already exercised by County and County Borough Councils . . .

The position demands of every Medical Officer of Health concerned a careful study and survey of the whole medical situation of his area."¹

On the subject of the future administration of the transferred general and special hospitals and the improvement of their staffing and equipment, the Chief Medical Officer made many detailed recommendations, and he emphasised the need for consultation between the authorities controlling both municipal and voluntary hospitals.²

One of the most important effects of the Local Government Act was the union, under the Medical Officer of Health, of preventive and curative medicine.³ The advantages of this union of the preventive and curative services, to which attention was drawn in the House of Commons during the debates on the Local Government Bill, were also stressed by Sir George Newman. "The administration and fulfilment of the work transferred from the poor law authorities," he said, "must now be absorbed into, and assimilated with, the communal system of preventive medicine. The antithesis between curative and preventive medicine which has been publicly suggested recently is an entirely false antithesis. It is false administratively as it is false from the point of view of the science and art of Medicine itself. Such a division of Medicine can only be based upon a misunderstanding of the position."⁴ As this principle was at the very basis of the Local Government Act, 1929, and the organisation which it created, Newman is at pains to buttress his own opinion by quoting that of Lord Dawson

¹ Annual Report of the Chief Medical Officer of the Ministry of Health, 1928, p. 73.

² Under Section 13. This was moved as an addition to the Bill by Lord Dawson in the House of Lords, and it imposed the duty of consultation on local authorities but not on voluntary hospitals. It has proved a useful provision as it has stimulated the formation of a number of hospital joint advisory committees.

³ This union of preventive and curative medicine, which has been so fruitful in improving both the hospitals and public health services, has not been regarded by Parliament as indissoluble; and the National Health Service Act, 1946, has adopted the principle of the separation of the treatment services, which come under the control of Regional Hospital Boards and Boards of Governors, and the preventive services, which remain with local authorities.

⁴ Annual Report of the Chief Medical Officer of the Ministry of Health, 1928, p. 95.

expressed in the Interim Report of the Consultative Committee on Medical and Allied Subjects, 1920 :—

“ Preventive and curative medicine cannot be separated on any sound principle, and in any scheme of medical services must be brought together in close co-ordination. They must likewise be both brought within the sphere of the general practitioner, whose duties should embrace the work of communal as well as individual medicine.”

On April 1st, 1930, when the Act came into force, local authorities and their officials were faced with the administrative problem of incorporating the extensive services, hitherto under the control of the Boards of Guardians, into their own organisations. Ordinary relief, in cash or in kind, became the responsibility of the newly-formed Public Assistance Committees; the Vaccination Service passed under the control of the Health Committees; and duties relating to the registration of births, marriages, and deaths were most usually discharged by the County Clerks' or Town Clerks' Departments under the supervision of counties' or county boroughs' Finance Committees. Up to this point the transfer of functions presented few difficulties. Where difficulties arose was when the question of the administrative disposal of the transferred hospitals and institutions came to be considered. They were a heterogeneous collection, consisting of general and special hospitals, institutions whose inmates comprised mainly the old and the mentally and physically infirm, and “ mixed ” institutions each containing beds for “ inmates ” and possessing a hospital wing or a number of hospital wards. Special kinds of institutions were receiving homes, working boys' homes and cottage homes.

Hospitals—a small proportion of the total—were administered in most cases by a medical superintendent, who was usually a full-time, but sometimes a part-time officer, under the Guardians. In general the transferred hospitals were understaffed, both from the medical and nursing points of view, and they possessed few consultants and specialists. Operating theatres were deficient both in numbers and equipment, “ X-ray ” units, where they existed, were undeveloped and undersized, and there were, as an almost universal rule, no laboratory facilities and no out-patient departments. The proportion of chronic as compared with acute cases was high, and it was customary for the voluntary hospitals to transfer all their long-stay cases to Poor Law hospitals and institutions. Admission to a Poor Law hospital was through the Relieving Officer, but in a few Unions the right of direct admission had been given to the Medical Superintendent who had been accorded for

this purpose the official status of a Relieving Officer. Hospital accommodation associated with a mixed institution was, as a rule, rather worse than that provided by the separate hospital, and it laboured under the additional disadvantage—from the medical point of view—that it was usually administered by the workhouse master who was the official superior of the Senior Medical Officer in charge of the treatment wards.

It is, perhaps, unnecessary to labour any further the defects of the Guardians' hospitals as they appeared to the medical officials of local authorities during the period preceding the appointed day. What was abundantly evident was that the transferred hospitals presented an unexampled field of opportunity to local authorities and their Medical Officers of Health. This opportunity presented itself in two ways—(i) to undertake the gigantic task of raising the standards of these hospitals so as to rival that of the best voluntary hospitals, and (ii) to establish close co-operation between the newly-acquired general and special hospitals and the Public Health Services related to them.

Technically, Poor Law hospitals and institutions constituted functions transferred to the councils of counties and county boroughs under the operation of sec. 1 of the Local Government Act, 1929, and would, in default of action by the local authority under sec. 5 of the Act, automatically pass under the control of the newly-formed Public Assistance Committees. In some areas this is what did happen, and Public Assistance Committees, responsible for all the duties previously performed by the Guardians (except vaccination and registration), continued the administration of the Poor Law almost precisely as before. The only change was a change in name. Needless to say this was not the intention of the Act, and the vast majority of local authorities went some way to administer the transferred functions in the spirit of the Minister's circular. The circumstances of one area differed widely from those of another and it was not possible to suggest any one type of organisation which could be adopted by all local authorities. Administrative schemes, required by the Act, varied greatly. In some local authority areas a declaration under section 5 transferred all hospitals, as from the appointed day, to the Public Health Committees. In a few cases (*e.g.*, Liverpool) both hospitals and institutions were transferred in this way to the Public Health Committee, and placed under the administration of the Medical Officer of Health. One county borough created a joint Committee consisting of the Health and Public Assistance Committees. It is to be noted, however, that the administration of hospitals and institutions by a Committee

other than the Public Assistance Committee, was (sec. 6) required to be undertaken "on behalf of and subject to the general direction and control of the public assistance committee." The meaning of this requirement was that transferred hospitals remained Poor Law hospitals, even if administered by the Health Committees, with all the disabilities which that entailed, including the necessity for the admission of patients by the Relieving Officer. After the passing of the Act, however, the Ministry of Health recommended local authorities to adopt a legal procedure termed "appropriation," by which any transferred hospital could be administered under the Public Health Acts and not under the Poor Law.

One of the greatest of the individual changes brought about by the Local Government Act was the passing away of the Metropolitan Asylums Board, the duties of which were transferred to the London County Council. This Board, established under the Metropolitan Poor Act, 1867, possessed more hospital accommodation than any similar body in the world.

Drastic improvements in the organisation of hospitals are a matter of long-term and not short-term policy, and it is not surprising that local authorities, after April, 1930, spent some time in planning what they should do with the gifts which Providence and the Legislature had presented to them. Progress during the 'thirties in some areas was rapid, while in others, partly because of the cost of improved equipment and staffing, hospitals remained much as they were under the Guardians. Local authorities were, however, in the early 'thirties handicapped in their efforts to improve the Poor Law hospitals, transferred to them on April 1st, 1930, by the financial crisis which became acute in the early months of 1931. The May Committee, reporting in 1931, recommended extensive reductions in national expenditure and this led to the postponement of schemes for the improvement of hospitals. The Ray Report of 1932, specifically concerned with reduction of expenditure by local authorities, had a similar and even more marked effect; and it was not until 1934 or 1935 that the new owners of the old Poor Law hospitals were in a position to take decided action in the direction of an improvement in the facilities provided by these institutions. Some of the larger cities, in the course of the 10 years following the passage of the Local Government Act, had raised the standard of the hospitals transferred to them to such an extent that they rivalled the best of the provincial voluntary hospitals. In the University centres, an improvement in the staffing of municipal hospitals led to the use of some of their beds for teaching purposes. The provision of teaching facilities at municipal hospitals was of

undoubted benefit to medical students on account of the large amount of clinical material available; while an association with the University, with the enhancement of status which that implied, conferred a corresponding advantage upon the hospitals chosen for this purpose.

The Local Government Act, 1929, is one of the important landmarks in the history of Public Health. By placing curative medicine under the administrative control of the Medical Officer of Health it enabled him to increase the usefulness of the Personal Health Services by associating clinics with hospitals and bringing the clinician into contact with preventive medicine. Through its agency, a vast system of hospitals was transferred from the control of the lay administrator, primarily interested in the Poor Law and steeped in its traditions, to that of the medical administrator, trained in curative medicine, who had become an expert in preventive medicine through long experience, and who could speak the language of the clinicians and understand their needs and sympathise with their points of view.

The taking over of hospitals by local authorities may be one of the causes of the phenomenal increase in the growth of hospital contributory schemes which took place during the whole of the fourth decade of the present century. Hospital contributory schemes varied in their details from place to place, but their purpose was to provide hospital accommodation free of charge when the subscriber or a member of his family needed it, in return for the payment of a few pence per week provided partly by the contributor and partly by his employer. Originally the intention was that bed accommodation was to be provided in voluntary hospitals, but as the contributory schemes expanded it became necessary to utilise more and more the facilities of the local authority hospitals. In some areas the proportion of accommodation provided by local authorities for contributors amounted, in the course of time, to half the total requirements. Hospital contributory schemes were of benefit to those, within certain income groups, who were able to join them, because they filled the gap in the National Health Insurance Schemes which only provided general practitioner services; and they became a major source of income to voluntary hospitals at a time when legacies, donations and subscriptions were beginning to fail.

One thing which the Local Government Act did *not* do was to "break-up" the Poor Law. It merely effected a change in the administrative machinery which operated the Poor Law. The Poor Law Act, 1930, was passed for the purpose of effecting changes

rendered necessary by the coming into force of the Local Government Act, and the system, somewhat modernised, remained in being after the end of the second World War. But, by the end of the 'thirties, the Poor Law system was no more than a frail shadow of its former self.

Unemployment between the Two World Wars

Although, during the nineteenth century, the total trade and industry of this country greatly increased, there were, nevertheless, periods in which there was much unemployment either generally or in particular occupations. Some industries such as ship-building, engineering and the metal trades have always had a high level of unemployment, even in times of prosperity. Booms and slumps, at the peaks and troughs of the trade cycles, occurred with distressing regularity, and there was little agreement amongst the economists as to the origins of these phenomena or the steps which should be taken to prevent them. A slump meant, of course, widespread unemployment, but there was a serious amount of unemployment even during boom periods. "Since the first World War, the booms at the top of the trade cycle in Britain have been accompanied by more than 10 per cent. of unemployment."¹ To the employer a slump meant loss of profits and sometimes bankruptcy, but to the worker it spelt unemployment and, if long continued, semi-starvation or recourse to the Poor Law.

In the case of the skilled worker, unemployment in the nineteenth century was usually a temporary condition, to be followed by a long period of remunerative work; but the casual labourers were more unfortunate than the rest of their fellows because unemployment was the constant accompaniment of their daily life. They and their families were therefore in a chronic state of destitution with all the evil consequences which that entails. Casual labour, where the worker is hired by the day or the hour and paid off when a particular job is finished, was the method of employment in connection with public works and the docks. The navy engaged on a large constructional contract, might obtain some weeks or months of continuous work, whereas the dock labourer was simply engaged during the loading or unloading of a ship and then discharged. The effect upon the morale of the men of a daily scramble for work, often in circumstances where "many are called but few chosen," can well be imagined. Public works and the docks have been mentioned as examples of industries mainly staffed by

¹ Beveridge, Sir William (Lord Beveridge), *Full Employment in a Free Society*, p. 183.

casual labour, but most trades have on their fringes a proportion of employees in this category.

Until 1911, when unemployment insurance began, there were no accurate official statistics on this subject, and it was not until 1920 that information covering most of the trades and industries of this country became available. Before 1920 the main sources of information about unemployment in various industries were contained in the records of the trade unions of claims for benefit by members who were out of work. The proportion of such members to the total active membership of the union enabled a calculation to be made of the average percentage of unemployment for the whole of the unions. Such a percentage represented the amount of unemployment in the ranks of the skilled workers, and it did not include unskilled and casual labourers who normally did not belong to any union. Some interesting information about the general level of unemployment in trades predominantly employing skilled workers is contained in Chart 5, embodied in the Report on Public Health and Social Conditions published by the Local Government Board in 1909, and covering the period from 1860 to 1908. The chart is compiled from statistics supplied by the trade unions and it shows seven periods of depression, namely, in 1862, 1868, 1879, 1886, 1893-4, 1904 and 1908. Periods during which employment was good for several years together were the years 1870-76 and 1895-1902.

After the 1914-18 war, the unemployment insurance scheme, of limited application until 1920, was made general, and very full statistical information became available. During the period 1921-38 the general unemployment rate fluctuated between a minimum of 9.6 per cent. in 1927 and a maximum of 21.9 in 1932, with an average of 14.2 per cent. These are, however, average figures taken over the whole country (Great Britain), and the unemployment returns in respect of individual trades differ widely from each other and from the general average. Thus, in October, 1937, the mean unemployment rate for workers engaged in scientific instrument making was 2.8 per cent. and in electrical engineering 2.9 per cent., while in the shipping industry it was 23.0 per cent. and in jute 23.1 per cent.

The evils of unemployment were, of course, recognised long before both the Majority and Minority Reports of the Royal Commission on the Poor Laws called such urgent attention to them. But unemployment before the first World War and that after it had salient points of difference. Before 1914 unemployment was, in general, cyclical and intermittent; after 1918 it tended to become

chronic in particular trades and, a still more distressing feature, in particular localities. Such localities, which became known as "Special Areas"¹, were those with a single trade or industry such as coal, ship-building and cotton, and during the period between the two wars they presented to successive Governments an almost insoluble problem. Between 1928 and the outbreak of the second World War the total number of unemployed persons on the registers of employment exchanges in Great Britain and Northern Ireland was continuously above $1\frac{1}{4}$ millions. The peak in the curve of unemployment was reached in 1932, during the financial crisis, when the numbers on the registers, including those temporarily stopped, climbed to the unprecedented figure of 2,813,042.

This enormous weight of unemployment gravely affected the social organism and it was one of the major causes of the financial crisis of 1931 and 1932. The Unemployment Insurance Scheme was only designed to cover short-term unemployment and it was necessary to adapt it to meet the new situation. It was obvious before the crisis that the Insurance Fund could no longer bear the full weight of extended payments, beyond the normal period of benefit, and financial assistance from the Exchequer became necessary. Transitional payments, commenced in 1931, subjected the long-term unemployed to a "means test" which involved the consideration of all the resources of the household and was bitterly resented. Many of the unemployed still remained a charge on the Poor Law and the heavily inflated budgets of the Public Assistance Committees became a heavy burden on the ratepayers, particularly in the distressed areas, where rateable values declined as unemployment increased. Finally, the Unemployment Assistance Board was established and this body, specially created to meet the prevailing emergency, took over from the Public Assistance Committees of local authorities responsibility for the majority of the able-bodied unemployed, after they had become ineligible for any further benefit from the insurance scheme. From 1934 onwards there were therefore three ways in which persons who became destitute through unemployment could obtain relief—from the Unemployment Insurance Scheme, the Unemployment Assistance Board or the Poor Law. Rates of benefit or relief from these sources were, however, very low. In the original scheme of unemployment insurance the rate of benefit was 7s. a week; and this was gradually increased until in 1924 it was 18s. for a man, 15s. for a woman and 2s. for

¹ The "Special Areas" were South Wales, Durham and Tyneside, and West Cumberland, but there was much long-term unemployment in other places, e.g., Blackburn and Liverpool.

each child. Rates granted by the Unemployment Assistance Board from 1934 onwards included 24s. for a man and wife, and allowances for dependent children which ranged according to age from 3s. to 6s. Relief provided by Public Assistance Committees under the Poor Law was at local discretion and varied according to the resources or, sometimes, the political complexion, of the Poor Law authorities. In some cases the scales of assistance were so generous that they caused some financial distress among the ratepayers, and one Poor Law authority was relieved of its functions by the Ministry of Health for exceeding what were considered to be reasonable limits in its allowances to the unemployed and their families. The vast majority of local authorities, however, kept their heads, even in the intensely difficult period between 1929 and 1934, and based their scales of Public Assistance more or less adequately upon the needs of the unfortunate recipients of relief. From 1934 the tendency was for local authorities to fix their scales to correspond to those of the Unemployment Assistance Board.

There is little doubt that the period of severe unemployment lasting from the middle of the third decade of the twentieth century up to the outbreak of war in 1939 was one of the most distressing experiences in the social history of this country. Unlike the trade slumps of the previous century which seldom lasted for more than a year or so, the depression of 1925 to 1939 seemed to go on continuously without hope of recession, and it defied the efforts of both statesmen and economists to suggest a means of ending it. The effect upon the national balance sheet of the loss of the output of nearly 2,000,000 workers was serious enough; but the repercussions of prolonged unemployment upon the unfortunate victims of this economic malady were such as to dismay all who came into contact with the lives of the workers during this period. There is little difference of opinion about the inadequacy of unemployment assistance or Poor Law relief for the purpose of providing for all the needs of those receiving it over a prolonged period. Over a short period of unemployment, 24s. for a man and wife with allowances varying from 3s. to 6s. in respect of dependent children was probably adequate because the family possessed resources gathered together during the time of relative prosperity. But if normal earnings ceased for a long period these allowances were wholly insufficient to provide rent, food and clothes as well as all the trifling necessities which go to make up the expenditure of even the poorest family.¹ This appeared to be particularly true when the family

¹ This point is emphasised in the Beveridge Report, 1942, and in the Pilgrim Trust's Report, *Men without Work*, 1938.

possessed several children, and most of the reports during the period emphasise this factor as being of primary importance. One of the most serious defects of the standards of assistance at that time was that they did not provide for the replacement of household linen or utensils or for amusements. "The low material standard allowed for a large family by the present assistance rates means that in few families with four or more children is it possible to maintain the equipment of the household, renew shoes and clothes and also buy sufficient food."¹ On the other hand, those without children dependent on them, such as, for example, elderly married couples living alone, were relatively "well off" on the allowances from the Unemployment Assistance Board.

But the psychological effects of long-continued unemployment were in many respects even worse than the physical. Men, throughout their working life conscientious members of society, began to drift into the category of unemployable; and some, if they belonged to one of the distressed areas and saw all around them evidences of the stagnation of industry, came in the long run to regard unemployment and idleness as the normal way of life. Such security as they had had was gone and there was nothing to replace it. Many families at this period resolved to send their children into "black-coated" occupations where the danger of unemployment was less even if the remuneration was no greater. Large numbers of men tried hard to obtain work by emigrating from the distressed areas to places where they supposed the chances of employment would be more favourable. The Pilgrim Trust Report, for example, refers to instances of men who had cycled all over Lancashire and Yorkshire from Liverpool in the hopes of finding work.

Time hung heavily on the hands of the unemployed and there was always the temptation to spend money from the "dole" in public houses and in betting. "Time," one unemployed man said, "is my worst enemy now."² Many of the unemployed spent much of their time in various types of clubs, and betting and the filling-up of football coupons were recreations which were universally popular, supplying, as they did, some relief from the monotony of an unoccupied life. The work of voluntary societies and, in particular, of the Workers' Educational Associations, was of great value in providing cultural occupation for a proportion of the unemployed.

One of the problems of this period which caused much concern in the medical profession was the effect of prolonged unemployment,

¹ *Men without Work*, p. 116.

² *Ibid.*, p. 150.

with its concomitant of low purchasing power, upon the nutrition of the unemployed and their families. To many it seemed highly doubtful whether the scales of allowances provided by the Unemployment Assistant Board and the Public Assistance Committees were anything like sufficient to keep the recipients and their families in an adequate standard of nutrition, no matter how wisely such relief was expended upon the necessities of life. In order to investigate this subject the British Medical Association appointed a Committee of its members in April, 1933, with terms of reference as follows:—To determine the minimum weekly expenditure on foodstuffs which must be incurred by families of varying size if health and working capacity are to be maintained, and to construct specimen diets. The Committee, of which the Chairman was Dr. (later Sir Kaye) Le Fleming, and whose members were Dr. G. C. M. McGonigle (Medical Officer of Health, Stockton-on-Tees), Sir Henry Brackenbury, Mr. N. Bishop Harman, Dr. G. F. Buchan (Medical Officer of Health, Willesden), Professor S. J. Cowell, Dr. G. E. Friend, Dr. (later Sir Robert) Hutchison and Professor V. H. Mottram, got to work immediately and produced its report in November, 1933. In the recommendations, the basic figure of 3,400 calories, contained in the food as purchased, is adopted as the unit requirement of the normal man of average stature if health and working capacity are to be maintained; and it is made up of 100 grams protein (50 grams of which should be first-class protein), 100 grams fat (of animal origin as far as possible), and 500 grams carbohydrate.¹ The task of the Committee was to compile diets containing, in sufficient variety, foodstuffs which would give the necessary amounts of proteins, fats and carbohydrates, and a number of such diets, each comprising sufficient food for a week, are contained in the report. Obviously, such diets can be varied enormously, but variety and palatability depend to some extent upon cost, and only the cheaper foods could be considered by the Committee. Costs of the various diets were assessed on the prices ruling in Stockton-on-Tees at that time (which were about 16 per cent. less than the mean prices throughout other areas) and also on the average of prices ruling in other places. Diets were compiled on the basis of the food requirements of an adult male, children aged 1–2, 2–3, 3–6, 6–8 and 8–10 years, and of families of varying sizes. The “man-value” of the food

¹ Many other standards of diet have been suggested, notably those of Voit (118 grams protein, 56 grams fat and 500 grams carbohydrate=3055 calories), and Atwater (125 grams protein, 125 grams fat and 450 grams carbohydrate=3520 calories).

required by children of different ages was also estimated, and this figure was taken as 0.3 in the case of a child of 1–2 years, increasing to 0.7 for a child aged 8–10 years. A woman's diet was calculated on the basis of 0.83 of that of a man.

Calculating the costs of the food requirements of families of varying sizes, the Committee found that a family with one child aged 1–2 years, would consume, on a basis of satisfactory nutrition, 13s. 6d. worth per week, while a family with three children aged between 6 and 14 years would require an expenditure of 22s. 6½d. The cost of a child's food at the time of this inquiry varied from 2s. 8d. a week for a child aged 1–2 to 4s. 2d. per week for a child aged 8–10, and would therefore be covered by the Unemployment Assistance Board's scale (p. 397), without, however, much being left over for other necessities, including clothing. Food for a man and wife alone, on average prices in selected areas, came to about 11s. per week and in Stockton about one-sixth less. A man, wife and three children aged 1–2, 6–8 and 8–10 years required to spend, as a minimum weekly cost to ensure a satisfactory intake of food for all members of the family, 20s., and this had to be balanced against the income derived from the Unemployment Assistance Board, namely 37s., leaving a sum of 17s. to cover all other items of expenditure, including rent. Rent was, indeed, a difficult problem, and the Assistance Board was compelled, some years later, to grant additional assistance to families paying rents higher than the average. McGonigle had shown in 1933 that the health and nutrition of a family might suffer when removed from an insanitary dwelling to a Corporation housing estate, because the payment of the additional rent involved a reduction in the food supply. It is evident from the figures given above, that relief to the unemployed during the long years of trade depression was insufficient to provide the necessary food and to cover expenditure on rent, clothing and household replacements, as well as insurance and amusements. In many cases the standard of nutrition suffered.

CHAPTER 2

IMPROVEMENTS IN THE PERSONAL HEALTH SERVICES

The School Medical Service

In Part IV, chap. 2, an account is given of the development of the School Medical Service from its establishment on January 1st, 1908, to the beginning of the first World War. This service, based upon the routine medical inspection of children in elementary schools, was well established by the year 1914. During the war, however, it was found impossible to continue fully the routine inspection of school children owing to the absence of many of the medical staffs of local education authorities on service in the armed forces. Until the end of the war, therefore, the School Medical Service was forced by stern necessity to accept a reduction in the standards which had been set for it, and it was not until 1919 that the rate of development attained in the pre-war years could be regained. One advantage possessed by the Service after the year 1919 was that its duties—and therefore its opportunities—were enlarged by the passing of the Education Act, 1918. Under the Education (Administrative Provisions) Act, 1907, local education authorities were empowered to make such arrangements as were sanctioned by the Board of Education for the treatment of defects found at medical inspections; and some used the power thus conferred upon them to make extensive provision for the medical care of the children attending elementary schools in their areas, while others considered that they had done all that was necessary by contributing to the local hospital. The Education Act, 1918, changed all this by making it the duty of education authorities to provide, to the satisfaction of the Board of Education, facilities for the treatment of certain defects found at routine or other medical inspections. The obligation to provide treatment facilities imposed by the Act on local education authorities came into force on August 1st, 1919, and satisfactory progress was made in this direction during the following two or three years. It is to be emphasised that the treatment arrangements required by the Board of Education were of a limited nature covering only, in the earlier stages, such conditions as minor ailments, dental defects, defective vision, enlarged tonsils and adenoids, and ringworm. Even this limited list of diseases or conditions for which treatment arrangements were required to be made by local education authorities involved the appointment of doctors, dentists and nurses and the making of agreements with

hospitals for the use of some of their accommodation. In progressive areas, however, arrangements for the care of the health of school children went much further than the minimum required by the Board, and in different parts of the country experiments were being made in the organisation of special schools or classes for blind, deaf, dumb, feeble-minded and other categories of handicapped children, and in the provision of facilities for open-air education.

The "open-air school," as a provision for debilitated children, had its origin in this country under the London County Council in 1907. In this movement, which rapidly spread to many provincial centres, Dr. Frederick Rose, Sir Ernest Gray, Mrs. Bridges Adams and Miss Margaret McMillan were the pioneers. Schools of this kind at Lewisham and Plumstead were opened in 1907 and certified by the Board of Education under the Regulations for Special Schools in June, 1908. This example was followed by Halifax (1908), Bradford (1908), Sheffield (1909), Norwich (1911) and Birmingham (1911).

Residential open-air schools, intended mainly for anaemic or pre-tubercular children, had an even earlier origin, the first being the West Kirby Convalescent Home for Physically Defective Children, opened on June 23rd, 1905. By the year 1920, 20 of these schools had been established, of which the Swinton House Open-air School, Manchester, was the largest, with accommodation for 122 children. Nursery schools, of which the earliest was that pioneered by Margaret and Rachel McMillan in the slums of Deptford in 1911, totalled 24 by 1921, but the movement, interrupted by the war, was gradually spreading and by 1930 there were 44, mostly situated in populous towns such as London, Birmingham, Bradford, Leeds, Manchester and Liverpool.

In the years immediately following the 1914-18 war the problems involved in the care of what were then called "abnormal children"¹ were beginning to receive consideration by the Board of Education and many of the local education authorities. Under this designation were included the following categories:—blind and partially blind, deaf and dumb, mentally defective, crippled and physically defective, tubercular and delicate, epileptic, neuropathic, and dull and backward. The number of abnormal children in 1920, exclusive of the dull and backward, was estimated by the Board of Education to be 164,500.²

¹ Now called "handicapped children."

² Annual Report of the Chief Medical Officer of the Board of Education, 1920, p. 98.

It will be gathered from the above brief description of the activities of the School Medical Service in the early 'twenties of this century, that it had passed beyond the purely experimental stage and had reached the stage of fairly rapid development. The medical staffs of the Board of Education and of the local authorities had succeeded in discovering the right kinds of questions to ask, and had found out some of the administrative answers. Although most of the experimental work had been carried out by School Medical Officers such as Kerr of the L.C.C., Auden of Birmingham and Wyche of Nottingham, the lessons derived from their experience in finding new methods of dealing with—for example—the blind or crippled child, were rapidly assimilated by the able medical staff which advised the Board of Education at that time. Of those who worked at the Board of Education in the early days of the School Medical Service, Dr. Alfred Eichholz and Dr. Ralph Crowley deserve particular mention. On them was laid the duty of selecting from all the experimental work going on throughout the country at that time those methods of care and treatment which were of permanent value, and worthy to be recommended for adoption generally by the School Medical Service. They and their colleagues travelled almost continuously from one part of the country to another, advising local education authorities and their officers, but, in turn, learning themselves in each area something of value to add to the sum total of the knowledge and experience of which the Board of Education became the repository.¹

During the period of the third decade of the century the steady progress of the School Medical Service continued, and the general standards of efficiency of the arrangements for the care of children attending public elementary and secondary schools became year by year more satisfactory as the value of this work became more clearly understood. A perusal of the annual reports of the Chief Medical Officer of the Board of Education gives a picture of much devoted work in many areas and a growing appreciation of the physical and mental needs of the young child. In one of Sir George Newman's reports, for example, it is suggested to local education

¹ Eichholz, Alfred, C.B.E., M.D. (1869–1933). Educated at the Manchester Grammar School and Emmanuel College, Cambridge. In the service of the Board of Education from 1898 to 1930. Member of the Council of the National Institute for the Blind. Gave evidence to a number of Government Committees of inquiry. Author of *A Study of the Deaf in England and Wales*.

Crowley, Ralph, M.D., F.R.C.P. (1869–). Educated at the Oliver's Mount School, Scarborough, St. Bartholomew's Hospital, and Berlin. School Medical Officer, Bradford. Medical Officer, Board of Education, 1909–34. Author of *Hygiene of School Life*.

authorities and their school medical officers that they should conceive of the primary object of medical inspection as being to furnish an answer to the question: "Is this child developing according to the plan which Nature has mapped out for him?" This physiological approach to the individual child has been the principle upon which all the work of the School Medical Service has been founded.

The steady progress of the School Medical Service during the years after the first World War was enlivened from time to time by some more than usually important advance, and in the late 'twenties and early 'thirties this took the form of a rapid development in the interest taken by the central authorities in the treatment of the cripple. Interest in the cripple was no new thing, and throughout the country voluntary effort had for many years provided care for those unfortunate children who, either through accident or disease, had been deprived of the full use of their limbs. Some of the voluntary bodies providing aid for crippled children had, indeed, a long history of usefulness to their credit, and their activities took many forms. Of the relatively few hospitals providing a complete service for the crippled child the Royal National Orthopædic Hospital, founded in 1838, was the first.¹ A Cripples Home and Industrial School for Girls was founded in Marylebone in 1851, and in 1865 the National Industrial Home for Cripple Boys was opened in Kensington. Subsequently the Home for Destitute Crippled Children at Gosforth, Newcastle-on-Tyne, was established and similar institutions sprang up in most urban areas throughout the country during the later years of the nineteenth century. The first day cripple school was founded at the Passmore Edwards Settlement in central London, largely owing to the efforts of the famous novelist, Mrs. Humphrey Ward, and this school was recognised by the Education Department in 1899.² This increased interest in the problem of the crippled child was shown locally by the establishment of voluntary welfare agencies of which the earliest were the Invalid Children's Aid Association in London, the Cripples Union in Birmingham, and the Liverpool Child Welfare Association.³

Progress in the treatment of crippling defects in children depended,

¹ One of the most important of the later orthopædic hospitals was the Shropshire Orthopædic Hospital opened by Miss (afterwards Dame) Agnes Hunt, in 1900.

² Annual Report of the Chief Medical Officer of the Board of Education, 1930, p. 51.

³ The Liverpool Child Welfare Association was founded by the late Miss Margaret Beavan in 1898. Miss Beavan was Lord Mayor of Liverpool in 1927-8.

however, upon the developments in the methods used by the orthopædic surgeons and this subject had received a great impetus as a result of the work of Sir Robert Jones and others during and after the 1914–18 war. The policy of the Board of Education was to encourage local authorities to develop comprehensive orthopædic schemes, embracing arrangements for prevention, treatment and education. A fully-developed orthopædic scheme required the provision of clinics for diagnosis, supervision and treatment, orthopædic hospitals for those requiring bed accommodation, vocational training centres, and arrangements for social after-care and employment.

Another post-war development of great significance was the increased interest taken by local education authorities in the maladjusted child. From its inception in January, 1908, the School Medical Service had centred its main activities on the physical care of the child, but routine inspections had year by year disclosed many thousands of children whose defects were mental and not physical. In the early days of the Service, children of this type were a source of both embarrassment and anxiety to School Medical Officers, skilled in the art of physical medicine but, in the case of many of them, untrained in the methods of dealing with the mentally retarded or maladjusted child. The case of the maladjusted child was at this period obtruding itself upon the public consciousness. It was recognised that among the children attending public elementary schools there was a small proportion who presented a variety of "behaviour problems." Such children, maladjusted towards their homes, their parents or some other part of their environment, might become juvenile delinquents even before they reached the age of adolescence, and suffer the pains and penalties which certain kinds of anti-social conduct entail. "In the work of the School Medical Service we must recognise that conditions which lead to the reformatory, the prison, the hospital or the asylum, *may have been developing during school life* and that accordingly manifestations of persistent abnormality in behaviour or of 'mal-adjustment' in children demand the close attention of the school medical officer."¹

One of the answers of the School Medical Service to the problem of the maladjusted child was the development of the Child Guidance Clinic. At the outset, those in charge of child guidance clinics realised that the diversified lines of approach to the problem child necessitated the services of a team consisting of a psychiatrist, a

¹ Annual Report of the Chief Medical Officer of the Board of Education, 1930, p. 65.

psychologist and a social worker who, pooling their observations at a case conference, might arrive at a diagnosis, and suggest lines of treatment. Child guidance clinics were, however, very much in the experimental stage in the early 'thirties. One of the first fully-organised clinics of this kind was the London Child Guidance Clinic established under the auspices of the Commonwealth Fund of New York at Tudor Lodge, Canonbury Place in 1929. Similar clinics were commenced in Bath and Liverpool about the same time, and a little later others were developed at Birmingham, Manchester, Bristol and Oxford either by, or in close association with, the School Medical Service.

Nutrition of School Children

In a previous chapter (p. 256) an account was given of the arrangements made during the early years of the century for the feeding of that minority of children attending elementary schools who were necessitous, according to the not very exacting standards of the class teachers. This provision no doubt saved many children from approaching actual starvation. The advent of the School Medical Service a few years later, with its arrangements for a thorough medical examination of each child, soon led to an interest being taken in nutrition and in the early reports of School Medical Officers this subject bulks largely. It was recognised by many that the nutritional state of the growing child was a matter of importance to those who studied and practised the science and art of Preventive Medicine. In particular, the interest of the medical profession was drawn to the incidence of deficiency diseases amongst children.

The Industrial Revolution, by drawing the great mass of workers from the country to the towns, had changed for the worse the dietetic habits of the people. The grinding of wheat by processes involving the use of steel rollers instead of mill-stones, separated the germ from the grain, giving the "white" bread which became far more popular than that produced from the older type of flour. Food brought to the towns from the country or imported from abroad passed through many hands and underwent many processes, all of which had the effect of reducing its original nutritional value. There was a good deal of adulteration of flour apart from the abstraction of most of the valuable wheat germ, and other foods lost some of their virtue by being manufactured, processed, coloured or mixed with substances of less value. Apart from all this, the diet of the poorer children in the towns was often insufficient in quantity and defective in quality. "Protective foods," such as milk

and fresh fruit and vegetables, plentiful in the country, were so scarce in the large centres of population that poorer children seldom saw them.

Deficiency diseases were, therefore, excessively common. Of these, the most obvious and most prevalent was rickets, referred to by many foreign observers as the "English" disease. The School Medical Officers noted on their record cards the presence of this condition in a large proportion of the pupils in the elementary schools. Lawson Dick, in 1919, expressed the conclusion that 80 per cent. of the children in the London Schools were to some extent rickety. This figure, although it referred to rickets which is mainly due to a deficiency of vitamin D and lime salts and phosphates in the diet, was also a significant index of the general standard of nutrition of London school children at that time. Figures equally unfavourable were published in connection with schools in the manufacturing towns of the North and Midlands. After the 1914-18 war, according to Dr. Harriette Chick and other observers, nearly all the children in central Europe were affected with rickets.

It is pleasant to relate that the nutritional standards of children in this country, as assessed by the amount of slight or severe rickets, have progressively improved since the early 'twenties. An important factor in this improvement was the increased use of cod-liver oil (as well as other nutrients) at the child welfare centres. The feeding of children in school began to be regarded as an important feature of school life, and local education authorities were encouraged by the Board of Education to make more and more provision of kitchens and feeding centres for this purpose. Nor were the research workers backward in providing substantial scientific reasons for expanding and improving the school meals service. It is perhaps sufficient to refer to the work of E. Mellanby¹ and M. Mellanby on the effect of the diet on teeth and bone formation (1921-1925) and to that of Corry Mann (1922) in Bermondsey and Southwark on the health and physical condition of children as influenced by the type of food provided for them.

A forward step of the greatest value was taken in 1934, when the Board of Education circularised local education authorities (Circular 1437 of September 5th, 1934), to commend to them a scheme prepared by the Milk Marketing Board for the provision of milk at reduced prices to children attending schools or approved centres. The milk, supplied in bottles holding one-third of a pint, was to be consumed at the school or centre, and cost $\frac{1}{2}d.$ each day. In practice it has been found that parents willingly paid this small sum, and the

¹ Now Sir Edward Mellanby, Secretary of the Medical Research Council.

effect upon the health and nutrition of children as a result of the regular consumption of such a valuable protective food as milk has been outstanding.

Their Physical Condition.—By 1939 the School Medical Service had been in operation for 31 years, and its beneficial activities had been largely instrumental in bringing about a truly remarkable improvement in the physique and general condition of children of school age. The members of the Inter-departmental Committee on Physical Deterioration, who were so distressed at the evidences all around them of the waste of child life, would have rejoiced if they had been able to foresee the progress achieved during the years following the publication of their famous report.

The school child of the 'thirties was, in the physical sense, a very different kind of being from his parents who attended a similar school in 1907. Age for age, he was heavier and taller than the generation which preceded him. He was better clothed and shod than were the children of a similar social class 20 or 30 years previously. Before the end of the first World War the sight of a bare-footed child in the streets had become rare in even the poorest of the industrial towns. Cleanliness had improved out of all knowledge as a result of the efforts of the School Nurses; rickets, by the nineteen-twenties, had disappeared as a cause of severe deformity; and the incidence of bovine tuberculosis was becoming less as the proportion of pasteurised milk rapidly increased.

Much, although not all, of the credit for these improvements must go to the School Medical Service. Even as late as 1939 there were, however, defects in certain parts of our services for the care of the child. It may be sufficient to mention two of these deficiencies. Immunisation against diphtheria was a weapon of proved worth, but it was not at that time sufficiently used and, in consequence, this disease caused many deaths amongst children each year. The proportion of children receiving school meals was in many areas less than 10 per cent. and thus one method of improving nutrition was to a large extent neglected. These deficiencies in the School Medical Service were remedied in the period from 1939 onwards.

The Dental Profession

So far nothing has been said in this book about dentistry and the organisation of the dental profession. The reason for this omission is that until the inception of the School Medical Service the dentist played little or no part in the general organisation of Public Health. In some specially progressive areas the services of the profession were used in connection with the care of the teeth



CHILDREN IN A POOR CLASS SCHOOL, 1907



CHILDREN FROM THE SAME SCHOOL, 1949

of the expectant mother, but efficient arrangements of this kind even as late as the 'twenties and 'thirties were somewhat exceptional. The opportunity of the dental profession to play an important part in the Public Health Service came after 1907, when routine inspections of the whole school population revealed the vast extent of the prevalence of dental disease among the children of this country. During the 1914-18 war the impressions on this subject, conveyed by the School Medical Officers' Reports, were confirmed by the examination of recruits to the Army amongst whom were found dental defects in from 70 to 80 per cent. of those called up for service.

The efficiency of the arrangements for the care of the teeth of children attending public elementary schools varied to an enormous extent in the local education authority areas, but, on the whole, the standard was low for many years, even after the Education Acts of 1918 and 1921 had made the provision of dental treatment, like medical treatment, universally compulsory. This regrettable fact was fully recognised by the Medical Department of the Board of Education, which made repeated endeavours to persuade local authorities to open more dental clinics, employ additional dental officers and, generally, to raise the standard of dental care. To some extent the remissness of local education authorities in regard to the care of the teeth of the school children, for whose physical condition they were responsible, was due to an imperfect appreciation of the influence of severe degrees of dental caries upon the general health of the child; but one of the real difficulties faced by the authorities was the overall shortage of dentists, which, then as now, placed definite limits upon the extent of the service. Amongst the general population, neglect of the teeth was almost universal except in the well-to-do classes, and in the lower income-groups dental care, apart from extractions for toothache, was almost unknown. Up to the year 1921 the organisation of the dental profession was hopelessly unsatisfactory, the Dentists Act, 1878, being almost a dead letter.

On July 12th, 1917, the Lord President of the Council appointed a Departmental Committee on the Dentists Act, of which the terms of reference were: "To investigate the extent and gravity of the evils connected with the practice of dentistry and dental surgery by persons not qualified under the Dentists Act; and to consider and report upon (i) the causes of the present inadequate supply of qualified dentists and dental surgeons; (ii) the expediency of legislation prohibiting in the United Kingdom the practice of dentistry and dental surgery by unqualified persons ;

(iii) the practicability, without impairing the existing guarantees for the efficient practice of dentistry of (a) modifying the course of study and examination prescribed for dental qualification; (b) reducing the time occupied; (c) diminishing the cost of training dental students.” The terms of reference are a sufficient indication of the complexity of the problems with which the Departmental Committee had to deal. Inquiries made by the Committee, under the Chairmanship of the Right Hon. F. D. Acland, M.P., made it clear that the extent of dental disease amongst school children and the adult population could hardly be exaggerated. One of the more important of the Committee’s recommendations, as far as the School Medical Service was concerned, was that there should be established in the area of each local education authority a complete scheme of dental inspection and treatment. The Committee recognised, of course, the difficulties in the way of an expansion of the service, which included the considerable expenditure entailed, the grave shortage of dentists, and the general lack of public interest in this matter. In view of the shortage of dentists, the Departmental Committee recommended the employment of dental dressers in the School Medical Service, working under the direct supervision of qualified dentists.

These recommendations were reinforced in 1919 by the proposals of the British Dental Association which contained the admirable suggestion, afterwards widely adopted, that each local education authority should appoint a whole-time dental officer, who should be responsible for the scheme of inspection and treatment in the area, assisted, as might be necessary, by assistant dental officers who should preferably be whole-time. A comprehensive report by Mr. Norman G. Bennett,¹ Dental Surgeon to the Royal Dental Hospital, London, and to St. George’s Hospital, and Chairman of the Representative Board of the British Dental Association, criticised the general standards of the School Dental Service and made many constructive suggestions for its improvement.²

One of the most useful methods of increasing the number of dentists appeared to be an amendment of the Dentists Act, 1878, which had established a Register, but had not been drafted with

¹ Sir Norman Bennett (1870–1947). Educated at St. John’s College, Cambridge, and studied medicine at St. George’s Hospital and dental surgery at the Royal Dental Hospital. Was for some years a member of the General Medical Council and held the office of President of the British Dental Association. Consulting dental surgeon to the Royal Navy. Author of *The Science and Practice of Dental Surgery*.

² This report is published in full in the Annual Report of the Chief Medical Officer of the Board of Education, 1918, pp. 96–106.

sufficient precision to prevent large numbers of untrained people from practising dentistry and holding themselves out as “dentists.” The new Dentists Act, 1921, amended the principal Act in such a way that there was in the future an absolute prohibition against the practice of dentistry by any person (except a registered medical practitioner) whose name was not on the Dental Register. This provision, it may be mentioned, was much more stringent than any contained in the two modern Medical Acts, which do not prohibit the practice of medicine by unqualified persons, but merely render it illegal to make false claims to be registered or qualified. The Act, however, contained generous terms for the admission to the Register of those who, although unqualified, had been practising dentistry for five out of the seven years immediately preceding the commencement of the Act. As a result, the number of registered dentists who could be employed by local education authorities largely increased, and the possibility of reinforcing the staffs of the School Dental Service became more favourable.

This legislation, coupled with the efforts of the Board of Education, stimulated progress in the care of the teeth of school children and in the 'thirties a relatively satisfactory service was being evolved. As far as the Dental Schools of the universities are concerned, the numbers seeking admission to their courses have never been adequate to provide for the real needs of the community. Perhaps one of the reasons for this reluctance to choose dentistry as a career lies in the fact that there are too few “prizes” in this profession as compared with medicine and the law.¹

Maternity and Child Welfare

The effect of the war upon the maternity and child welfare organisation was serious. Owing to the demands of the Services for both medical and nursing staff, it was found in many areas difficult to provide sufficient personnel to continue child welfare clinics and to maintain home visiting. During the last two years of the war there was a serious disturbance in the usual balance of births over deaths. In 1918 the birth rate was 17.7 per thousand, and this was the lowest ever recorded; and in the last quarter of that year, as the Medical Officer of the Local Government Board reported, there was for the first time since the establishment of civil registration an excess of deaths over births. This drop in the birth rate was, for the time being at least, a temporary phenomenon and in

¹ This was the situation before the National Health Service Act, 1946, had come into operation. In the National Health Service the financial position of the dentist has greatly improved.

1920 and 1921 a revival took place. Nevertheless, the fact that in 1918 the birth rate had declined pointed at that time to the need for the preservation of the lives of those infants who were born, and thus reinforced the claims of the Child Welfare Service for a due share of the medical and nursing resources of the community.

In 1918 legislation was passed which strengthened the hands of the local authorities in connection with their maternity and child welfare schemes. Until this date, there was some doubt about the legality of certain of the expenditure of local authorities on the provision of services for the mother and the young child. The Maternity and Child Welfare Act, 1918, resolved any doubt there might have been on this question by providing that any local authority within the meaning of the Notification of Births Act, 1907, could make such arrangements as might be sanctioned by the Local Government Board for attending to the health of expectant mothers and nursing mothers and of children under the age of five years not being educated in schools recognised by the Board of Education. The Midwives Act, 1918, authorised local supervising authorities to make grants towards the training of midwives and initiated the system of payment to medical practitioners called in under the Rules of the Central Midwives Board.

The central figure in any Child Welfare Scheme is not the doctor but the Health Visitor. As the years went by, the number of Health Visitors employed by local authorities continually increased until in 1918 it had reached the figure of 3,038. For many years local authorities laid down their own standards of qualification for the Health Visitors they employed. Some were trained nurses, while others had no particular qualifications except, possibly, the possession of some experience in social work. A distinct step forward took place in 1908, when the Royal Sanitary Institute, ever in the van where the needs of the Public Health Service were concerned, instituted an examination for Health Visitors and School Nurses. For many years, however, there was no definite scheme of training for Health Visitors. The London County Council (General Powers) Act, 1908, empowered local sanitary authorities in London to appoint suitable women as Health Visitors, and the Local Government Board were authorised to make regulations, as far as the metropolis was concerned, prescribing the qualifications, duties and salaries of Health Visitors. As a temporary measure, the qualifications prescribed were any of the following :—a medical degree, the full training of a nurse, the certificate of the Central Midwives Board, some training in nursing and the Health Visitors' Certificate of a society approved by the Board, or the previous discharge of duties

of a similar character in the service of a local authority. In 1909 the Board of Education issued general regulations prescribing the qualifications and the course of training required for Health Visitors.

A number of training schools were established in various centres of population during the first 20 years of the century, of which some of the first were at King's College for Women, the Battersea Polytechnic, the Bedford College for Women, the University College of South Wales and Monmouthshire, and the Liverpool School of Hygiene.

In view of the urgent need for midwives, the provision of local training courses was encouraged by the Board of Education and the Ministry of Health. Policy immediately after the war was that the training of pupils was a matter for the Board, and the responsibility for the supervision of their practice when qualified came within the province of the Ministry. Grants in aid of the training of midwives were commenced by the Board of Education in 1919. Both Departments worked in close co-operation in the work of organising and supervising the training schools for midwives, and they regarded instruction in ante-natal work and child welfare as an essential part of training. At this time—shortly after the war—the need for a service of “home helps,” to take charge of the household during the lying-in period, was being generally felt, and many local authorities and voluntary societies began the organisation of a service of this kind. The urgent need when the birth rate began to rise in 1920 and 1921 was for the provision of more hospital beds for cases where the confinement was expected to be complicated. To meet this requirement the Central Department approved of the use of the excellent accommodation contained in a number of Poor Law infirmaries and workhouses, on the condition that the ward or wards so used should be called the District Maternity Home, and that each patient was admitted only on an order of the Medical Officer of Health. These conditions were laid down in order to remove, as far as possible, any “Poor Law stigma.”

Maternity homes, often conducted in large houses, were established in many areas by local authorities and voluntary societies in order to accommodate patients whose confinements were regarded as likely to be normal. The foregoing arrangements were found sufficient to provide for the care of mothers during the two or three years when the birth rate was unusually high. Later, during the 1920's, the birth rate fell to more normal proportions, but the interest in maternal care continued and much attention was devoted to the question of the reduction of maternal mortality and morbidity.

The passing of the Maternity and Child Welfare Act in 1918

gave formal authorisation for the expenditure of public funds upon the services dealing with the care of the mother and the child, and the necessity for Ministry sanction to individual schemes led to the establishment of a section in the Medical Department to supervise generally this important work throughout the country. The first head of the Maternity and Child Welfare Branch of the Ministry of Health was Dr. Janet M. Campbell,¹ who was transferred there from the Board of Education in 1919 as a Senior Medical Officer. Dr. Campbell had for a period of 11 years taken a full share in the development of the growing School Medical Service, as a colleague of Newman, Eichholz and Crowley, and she was now entering upon a field of work in which she was to gain an international reputation. The Act of 1918 had given a new impetus to the maternity and child welfare movement, and the number of infant welfare centres, developed out of "schools for mothers" which had been subsidised for many years by the Board of Education, soon reached 3,000. One of the first important duties allocated to Dr. Campbell after her appointment as Senior Medical Officer at the Ministry of Health was to undertake an extensive investigation into maternal mortality. In this she was assisted by Dr. Jane Turnbull (Deputy Senior Medical Officer), Dr. Barbara Cunningham, Dr. F. Barrie Lambert, Dr. Isabella Cameron, and other medical members of the staff of the Maternity and Child Welfare Branch. Reports, published in 1924 and 1927, dealt with every aspect of the problem of maternal mortality and created great interest both in this country and abroad. As a consequence of the publication of these reports, the Minister of Health, Mr. Neville Chamberlain, appointed in 1929 a Departmental Committee, of which the Chairman was Sir George Newman,² to advise upon the application to maternal mortality and morbidity of the medical and surgical knowledge available. The Committee was asked to advise also on questions of research into this problem. An Interim Report was published in 1930, and a Final Report in 1932. Each Report summarised the results of extensive investigations into the underlying causes of the deaths of women in childbirth. Altogether, 5,800

¹ Campbell, Dame Janet M., received her medical education at the London School of Medicine for Women. She was a Medical Officer of the Board of Education from 1908–1919, and from there was transferred to the newly created Ministry of Health, where she became Senior Medical Officer in charge of Maternity and Child Welfare. Was created a D.B.E. in 1924.

² Newman, Sir George, G.B.E., K.C.B., M.D. (1870–1948). Educated University of Edinburgh, and King's College, London. Senior Demonstrator of Bacteriology and Infective Diseases, King's College, London, 1896–1900. Medical Officer of Health, Finsbury, and Bedfordshire County. Chief Medical Officer, Board of Education, 1907–35, and Ministry of Health, 1919–35.

such cases were investigated and it was found that clinical, social, administrative and economic factors were involved. The Departmental Committee refuted the idea that all maternal deaths were preventable. "Changes in social life," they say, "necessary to raise the standards of health and physical development of the women of the nation can come only with time; great advances in medical knowledge must be made before the risks of childbirth can be eliminated; even then the factor of human fallibility will remain."¹ But there were many serious deficiencies, in their view, in the facilities for the training of student-midwives and for the post-graduate instruction of doctors. Little encouragement had been given to the younger obstetricians and gynaecologists to establish themselves in the non-teaching provincial centres. There was too little ante-natal supervision by general practitioners and midwives, and what there was of it often was too perfunctory to deserve the name. It was emphasised, in addition, that there was a general need for more hospital beds for ante-natal abnormalities and for the admission of cases of sepsis at an early stage.

In the Committee's opinion, a reduction in maternal mortality and morbidity depended upon a higher standard of care of the mother before, during and after the confinement; and, in order to attain this higher standard, it made a series of recommendations which included the better organisation of midwifery services and the more adequate training of doctors and midwives.

The recommendations of the Departmental Committee were undoubtedly of great value to local authorities as they indicated very clearly the lines on which future progress should be made. Memoranda issued by the Ministry of Health to local authorities emphasised the need for a levelling up of all the parts of their maternity services, and visits of inspection to all areas where the maternal mortality rate was high were made by Medical Officers of the Department. During the period between 1934 and 1937 an exhaustive investigation in many areas into all the known factors entering into the causation of maternal mortality was undertaken by the Ministry of Health. The team of investigators comprised six Medical Officers of the Department, three of whom had special knowledge of maternity services and three of public health services in general, and they had the advantage of the counsel of Sir Comyns Berkeley, at that time Chairman of the Central Midwives Board and Consulting Obstetric and Gynaecological Surgeon to the Middlesex Hospital and the City of London Maternity Hospital.

¹ Final Report of the Departmental Committee on Maternal Mortality and Morbidity, 1932, p. 134.

Both the general conduct of the inquiry and the preparation of the report were under the supervision of Dr. Hugh A. Macewen, a Senior Medical Officer of the Ministry of Health, and among the members of the staff of the Department who undertook the local investigations were :—Miss Jane H. Turnbull, C.B.E., M.D., Miss Isabella D. Cameron, M.D., Mrs. Barbara M. Macewen, O.B.E., M.D., and C. T. Maitland, M.D., F.R.C.P. The basis of the investigation was the compilation by the Medical Officers of Health in each of the selected areas of a case record giving details of the circumstances connected with each maternal death. A similar system had been initiated many years previously by Professor Matthew Hay, the Medical Officer of Health of Aberdeen, and this had been continued under his successor, Dr. J. Parlane Kinloch, who published the results of the whole inquiry in 1928.

The Report of this Investigation into Maternal Mortality was preceded by a prefatory note by Sir Arthur S. MacNalty,¹ the Chief Medical Officer of the Ministry of Health and Board of Education, who referred to the passage into law of the Midwives Act, 1936, which made universal a service of salaried midwives throughout the country, and expressed the expectation that the new service would save the lives of many mothers in circumstances in which, without it, lives would be lost. In general the Report confirmed the findings of the Departmental Committee and of previous inquiries in regard to the necessity for skilled maternal care at all stages, and it made a number of important recommendations which were to exercise much influence upon the development of the midwifery services during the next few years. The main recommendations were, in brief, as follows :—

- (i) The establishment, under the direction of the Medical Officer of Health, of an adequate service of obstetric consultants. The functions of these consultants were to assist practitioners undertaking domiciliary midwifery, to conduct consultative ante-natal and post-natal clinics, to exercise clinical supervision over patients admitted to local authority hospitals, to supervise the treatment of patients suffering from puerperal sepsis, and to be responsible for domiciliary treatment in cases of grave obstetric abnormality where removal to hospital was not possible.

¹ MacNalty, Sir Arthur S., K.C.B., M.D. (1880–). Educated Corpus Christi College, Oxford, and University College Hospital. Assistant County Medical Officer of Health, Essex; Medical Inspector, Local Government Board, 1913–9; Medical Officer and Senior Medical Officer, Ministry of Health, 1919–35; Chief Medical Officer, Ministry of Health and Board of Education, 1935–40.

- (ii) That Local Supervising Authorities should be empowered to take steps to ensure that the best obstetric skill was available in all cases in which midwives were required, under the Rules of the Central Midwives Board, to call in a doctor.
- (iii) The organisation of emergency units ("flying squads") from amongst the staffs of maternity hospitals to provide for the domiciliary treatment of patients too ill to be removed.
- (iv) A general improvement in the maternity units at hospitals and in the arrangements of consultative and district ante-natal clinics.¹

It will be seen from this summary of the recommendations contained in the Report that the investigators who conducted this inquiry were unable to discover any "royal road" to the reduction of maternal mortality, and they wisely relied upon "competent midwifery before, during and after childbirth." Their recommendations were therefore directed to the improvement in all areas, including those with low as well as high mortalities, of the obstetric arrangements. Puerperal fever, which had always been the cause of a high proportion of deaths in childbirth, even when the usual aseptic precautions were taken by the attendants on the mother, remained a problem which was not solved, as far as treatment was concerned, until the introduction of the sulphonamides in the late 'thirties. The Report therefore reserved the subject of puerperal fever for further research "with a view to the discovery of a reliable prophylactic treatment." It also recommended research into the difficult question of abortion and into the possible effect of the dietary upon child-bearing.

There is no doubt that the Report of an Investigation into Maternal Mortality, for which the Ministry of Health and, in particular, Sir Arthur MacNalty and Dr. Hugh A. Macewen, were mainly responsible, resulted in some definite improvements in the standards of midwifery in many areas between the date of its publication and the outbreak of the second World War in 1939. Perhaps it would be scarcely true to say that it stimulated an additional interest in this subject as interest was already very great. Of those who were foremost in the campaign for better maternal care during the 'thirties the names of Mrs. Baldwin² and Lady Rhys-Williams³

¹ Report of an Investigation into Maternal Mortality, 1937, pp. 289-90.

² Later, Countess Baldwin of Bewdley.

³ Lady Rhys-Williams was created a Dame of the Order of the British Empire in 1937.

stand out prominently. It was mainly due to their efforts that the Midwives Act, 1936, was passed and this Act, by securing the organisation of a service of salaried midwives employed directly by, or under the control of, the Local Supervisory Authorities, laid the foundations of an improved midwifery service. What the Report issued in 1937 did, was to point out the weak points in the service, and to suggest eminently practical means for the improvement of the general standards of midwifery in all areas.

The value of publicity and of directing attention to the exact cause of maternal deaths, instead of to generalities, was shown in what has come to be known as the "Rochdale experiment" which was begun in 1931. For the preceding 10 years, Rochdale had the unenviable distinction of having the highest Maternal Mortality rate in the country: Dr. Andrew Topping¹ who became Medical Officer of Health in 1930, established the fact that the great majority of deaths were due to absence of adequate ante-natal care and to unnecessary interference in labour on the part of doctors, and not to occult rickets, "women working in the mills", smoke-laden atmosphere, etc., which had been advanced as causes. Frank exposure of the real causes by public lectures and in the local press, extension and improvement of ante-natal and domiciliary midwifery services, together with co-operation from general practitioners, brought the rate down to well below average within 18 months and it has remained at a comparatively low level since then.

An outstanding invention at this period was the apparatus introduced by Dr. R. J. Minnitt of Liverpool for the purpose of inducing analgesia for the relief of pain during childbirth. This apparatus, which employs nitrous oxide gas and air, can be transported by the midwife and used by the patient herself.

Mental Deficiency

Prior to the year 1913, when the Mental Deficiency Act was passed, the general arrangements in this country for the care of children and adults suffering from any of the recognised degrees of retardation of the development of the mind were unsystematic and inadequate. In the towns many of these unfortunate persons, unable to earn a living in a fiercely competitive society, were forced by destitution to become permanent inmates of the Poor Law institutions where they were kept in a degree of comfort much superior to anything they were able to find in the still harder world outside, but where they received little of the training or education suited to their mental

¹ Later Professor of Social and Preventive Medicine, University of Manchester. See also p. 271, note.

condition. In the less exacting circumstances of the countryside, where life proceeded at a slower pace than in the towns, the imbecile, and sometimes even the idiot, was often able to earn his keep by performing routine duties and to live in some kind of comfort and decency. Power to deal with idiots and imbeciles was available in the Idiots Act, 1886, and idiots could be compulsorily sent to an institution under the Lunacy Act, 1890. Education authorities possessed the power to provide for the education of mentally defective children under the Elementary Education (Defective and Epileptic Children) Act, 1899 (p. 255), but few of them had taken the trouble to ascertain the number of children who might be dealt with in this way. The problem of obtaining information about the amount of mental deficiency in the country was referred to a Royal Commission in 1904, which was required "to consider and report upon the existing methods of dealing with idiots and epileptics, and with imbecile, feeble-minded, or defective persons not certified under the Lunacy Laws." In order to obtain some close estimate of the number of defectives of the various grades for which provision might be necessary, the Commission made exhaustive inquiries in 11 areas in England and Wales, one in Scotland, and four in Ireland and, on the results thus obtained, came to the conclusion that the amount of mental deficiency, of all grades, was 4.6 per 1,000 of the population.

As a result of the information contained in the Report of the Royal Commission on the Care and Control of the Feeble-minded, issued in 1908, the Mental Deficiency Act, 1913, was passed. This Act, the first dealing with mental deficiency as a whole, constituted the councils of counties and county boroughs as the authorities for the local exercise of its provisions, and it prescribed three methods for the control of mental defectives—by detention in an institution, placing under guardianship, and supervision. In 1927 the Mental Deficiency Act of that year made some detailed amendments to the original Act.

From the point of view of accommodation, the Mental Deficiency Act, 1913, was passed at an unfortunate time, and hostilities retarded the building of suitable institutions for several years. The provision of accommodation has never, in fact, been sufficient for the needs of the large number of defectives in the country who require institutional care, and if the findings of the Joint Committee, appointed in 1924 to consider certain aspects of the administration of the 1913 Act, including ascertainment, are correct there is a pronounced tendency for the amount of mental deficiency to increase. Dr. E. O. Lewis, at the request of the Joint Committee, conducted a most careful and elaborate investigation into the incidence of mental deficiency among the population at that time, and he came

to the depressing conclusion that the number of cases was about double the estimate of the Royal Commission 20 years previously. It seems unlikely that this increase in the number of defectives was due entirely to the more careful methods of ascertainment adopted by the Joint Committee, and it has been generally accepted that there had been a rise in the incidence of this condition between 1908, when the Royal Commission reported, and 1928, when Dr. Lewis's investigations were taking place.

Immunisation

The term "immunisation" refers to the production, by artificial means, of a condition of increased resistance against certain types of infectious diseases. Although in theory it should be possible to immunise artificially against many of the known infectious diseases, in practice this method is only applicable in connection with a limited number of such conditions. Of all the methods used to protect individuals against the attacks of the numerous micro-organisms which produce disease in human beings, vaccination in connection with smallpox is the oldest, has been the most used and has been found by long experience to be most successful. Methods of protection against enteric were devised by Almroth Wright, against plague and cholera by Haffkine, and against diphtheria by a number of workers, some of whose names will be mentioned in the next paragraph.

Diphtheria.—In modern times the most universally used of the newer means of immunisation has been in connection with diphtheria, and there is now an immense literature on this subject. This infectious disease produces damage in the body by means of a toxin, which is liberated from the specific bacteria causing the condition, and all methods of immunisation are based upon chemically modified toxins. Progress in the art of immunisation against diphtheria depended upon research into methods of producing modified toxins (toxoids) of high antigenic value. Much of the earlier work in this subject was carried on in the United States, notably by W. H. Park and A. Zingher; but, in Great Britain, a number of workers, including R. A. O'Brien, A. T. Glenney, C. C. Okell and H. J. Parish, have been successful since 1921, in producing antigens which have been of great usefulness. Toxin alone has been found too dangerous to use, and a number of accidents have occurred when a mixture of toxin and antitoxin has been employed, owing to the tendency in certain circumstances of the two ingredients of this mixture to dissociate. The discovery in 1924, by Ramon of the Pasteur Institute that diphtheria toxin could be so modified

by treatment with formalin that it lost its dangerous properties while still retaining the power to stimulate the production of immunity, was a long stride forward in connection with this subject. Although mixtures of toxin and antitoxin were used in the United States until the early 'thirties, the tendency elsewhere had been to employ as an immunising agent a preparation containing modified toxin (toxoid) and antitoxin. A further advance was made when it was discovered by Ramon, Glenny, Hartley and others, between 1923 and 1927, that preparations derived from the precipitation or flocculation of the active principle in the toxin formed an efficient antigen for the stimulation of antitoxin formation in the body. Toxoid-antitoxin floccules began to be much used in the immunisation of children against diphtheria in the period from about 1935 onwards, and a little later an alum-precipitated toxoid, first used in the United States, proved to possess high antigenic value. In other preparations it had been found necessary to give three injections, whereas the advantage claimed for alum-precipitated toxoid, owing to its slow absorption, was that one injection would be sufficient to produce the necessary high level of immunity. This claim was, however, overstated, and it is now recognised that, using this preparation, two inoculations are necessary.

This measure of progress in the discovery of methods of immunisation against diphtheria would not have been possible, but for the introduction of a test for roughly estimating the amount of antitoxin circulating in the blood. The test, which was discovered by Schick¹ in 1913, depends upon the effect produced by injecting into the skin a very small measured dose of diphtheria toxin. A positive reaction, shown by a reddening of the skin, indicates that the subject has a low level of antitoxin in the blood and is susceptible to the disease; a negative reaction denotes insusceptibility.

Scarlet Fever.—Research into the causation of scarlet fever and into methods of producing immunity against it has had to face formidable obstacles, largely on account of the fact that streptococci are widely distributed in nature and comprise a group of organisms which are morphologically similar, but manifest surprising difference in their virulence and in their chemical and serological reactions. In Part II, chap. 4, (p. 180), an account is given of the work undertaken by Klein on streptococcal organisms isolated from the teats and udders of cows, and from which had arisen at Hendon outbreaks

¹ Schick, Bela (1877–). Born in Hungary and studied medicine at Graz. For many years on the staff of the Children's Department at the University of Vienna. In 1923, became Director of the Children's Department of the Mount Sinai Hospital, New York.

of scarlet fever in 1885. For many years after this time it was recognised that a long-chained streptococcus was consistently present not only in the throat, but also in the blood-stream of those suffering from this disease. As time went on and the streptococci were to some extent differentiated it was found that the organism associated with scarlet fever belonged to the haemolytic group. Nevertheless, the organism was so widely spread and responsible for so many pathological conditions, that there could be no certainty that it was the agent responsible for scarlet fever even though it was commonly associated with that condition.

Progress in the differentiation of the various strains of streptococci was slow and attempts made by many investigators to prove the causal relationship between this organism and scarlet fever continued to be abortive. Klein's high degree of certainty on this point was due in part to his lack of knowledge about the complexity of this group. Well after the turn of the century, evidence began to accumulate that certain strains of *Streptococcus pyogenes* could, in fact, cause scarlet fever in human beings. Thus, in 1914, Krumwiede, Nicoll and Pratt reported a case where a laboratory worker, accidentally infected by sucking into her mouth a suspension of one strain of *S. pyogenes*, developed an attack of scarlet fever. G. F. and G. H. Dick in the United States, in 1921 and later, succeeded in conveying this disease to volunteers by inoculating their throats with haemolytic streptococci obtained from scarlet fever patients.

In 1918 Schultz and Charlton showed local blanching of the skin of a scarlet fever patient when human serum was injected into it. This constituted what is known as the Schultz-Charlton reaction, which was found to be due to the neutralisation of the erythrogenic toxin, derived from the streptococcus, by antitoxin in the serum. The greatest advance in this subject was made by Dick and Dick in 1924, when they introduced what is now referred to as the Dick Test. This test, like the corresponding Schick Test in connection with diphtheria (p. 421), is a rough attempt to estimate the state of immunity. It is similar in principle and operation to the Schick Test, the substance injected into the skin being a small amount of a filtrate of a broth culture of the scarlatinal strains of *Streptococcus pyogenes*.

In the case of scarlet fever it cannot be said that any one person deserves the whole credit for discovering the causal factor. Lancefield and Gordon elaborated modern methods for typing the streptococci. G. F. and G. H. Dick, however, stand high on the list of the many investigators who added so much to our knowledge of this ubiquitous organism during the first quarter of the twentieth century.

Typhus.—Modern researches into this disease, which has been referred to on many occasions in previous chapters, now recognise two main types—the classical or louse-borne type as found in Europe during the centuries, and a type which is not conveyed by lice and is called the murine type. Murine typhus is transmitted by ticks, mites and fleas which are carried by lower animals, especially rodents. We are only concerned here with the classical, epidemic type of the disease.

In spite of the fact that epidemic typhus has been a scourge of mankind throughout the ages,¹ it was not until 1909 that Nicolle discovered that the disease was transmitted from man to man by the body louse. The discovery of the causal organism of typhus is due to da Rocha-Lima who in 1916 demonstrated that it was a *Rickettsia*. This organism can be grown, with due care, on chick embryos. Fortunately, from the point of view of diagnosis, Weil and Felix in 1916, while working in Eastern Galicia,² discovered a proteus-like organism which possessed the peculiar property of being agglutinable by the serum of typhus patients. This diagnostic test, called the Weil-Felix Reaction, utilises *Proteus* X19, which is the most readily agglutinated strain. A number of vaccines of *Rickettsia prowazeki*, for prophylactic purposes, have been prepared by workers in this field, using chick embryos and other methods for the growth of the organism; and these have proved to be of considerable value.³

Medical Research

Reference has been made in Part IV, chap. 1 (p. 312), to the Medical Research Committee, established under the National Health Insurance Act, 1911, and controlled by the Insurance Commissioners, and to its successor, the Medical Research Council. When the Ministry of Health was founded in 1919, the Insurance Commission was abolished, and some new method of financing and fostering medical research had to be developed. Finally, after consideration of the various established bodies which might efficiently fulfil this function, it was decided to place the important subject of medical research under a Committee of the Privy Council, and effect was given to this decision in section 3 of the Ministry of Health Act, 1919. This was a desirable step to take as the Privy Council, although no longer a body with any important administrative

¹ See Zinnser, Hans, *Rats, Lice and History*.

² Where typhus is endemic.

³ Vaccines against typhus were much used in the Second World War—especially that of Cox, prepared in the United States.

functions, was ideally suited for the discharge of the responsibility for medical research. The present title of the Medical Research Council was given to it in 1920, and it then received a new constitution and the grant of a Royal Charter of Incorporation, which was amended in 1926. The Committee of the Privy Council for Medical Research has the Lord President as chairman and, since 1926, its members have consisted of the Secretary of State for Home Affairs, the Secretary of State for Dominion Affairs, the Secretary of State for the Colonies, the Secretary of State for Scotland, and the Minister of Health. For the work of the Medical Research Council the Lord President is responsible in Parliament. Members of the Medical Research Council, in number 11, are appointed by the Privy Council.

In part, the work of medical research is carried on at universities, medical schools and hospitals, and much of the expenditure of the Council is devoted to affording assistance to independent investigators or teams of investigators undertaking inquiries at these institutions. But, in addition, the Medical Research Council, which possesses a large scientific staff, undertakes much work on its own account at the National Institute for Medical Research, situated at Hampstead with farm laboratories at Mill Hill; and it directly maintains the work of the following laboratories :—The National Collection of Type Cultures at the Lister Institute, London, the Standards Laboratory in the Dunn Institute of Pathology, Oxford, and the Dunn Nutritional Laboratory, Cambridge. The Council also possesses Committees of Research on Tropical Medicine and Industrial Health and it has appointed many special scientific committees to deal with particular subjects.

Tuberculosis

The previous section in this book dealing with tuberculosis is contained in Part IV, Chap. 1, where the early stages in the development of this Service, established in 1912, are described. At that time, and for many years after, the principal requirement of the expanding Tuberculosis Service was the provision of sanatorium and hospital beds for the treatment—often prolonged—of patients suffering from this disease. After the first World War the provision of bed-accommodation was accelerated and, as the years went by, the need for additional facilities increased as surgery came to the aid of medicine in the treatment of tuberculosis. But even medicine and surgery were not the only remedial and preventive agents against this disease. “Tuberculosis is no longer solely a disease of medical significance and relegated entirely to the physician and

surgeon," the Chief Medical Officer of the Ministry of Health observes in his Annual Report for the year 1936. "Its social and economic implications are far-reaching Voluntary and lay workers have toiled side by side with the professional workers, doctors, health visitors and nurses, and they have seen their reward in the steadily declining death rate from tuberculosis year by year."¹

The steadily decreasing death rate, to which the Chief Medical Officer refers, could be attributed, in part at least, to such social phenomena as the improved housing situation, a rise in the standard of living and the better education of the population both generally and in regard to their knowledge of the methods of spread of pulmonary tuberculosis. Education, in the 'thirties of the present century, was making more and more people conscious of their Public Health duties towards their neighbours. Nevertheless, a great part of the credit for a steady reduction in the tuberculosis death rate must be awarded to the medical profession, which had evolved new methods of treatment of chest tuberculosis. In the second decade of the century the sanatorium regime consisted of the provision of fresh air, nourishing food, and rest and graduated exercises. By the end of the war the various methods of inducing lung-collapse were coming more and more into use, and these involved a much more complicated sanatorium organisation, including the provision of operating theatres and X-ray apparatus of a higher standard of efficiency. The introduction of chest surgery, and its rapid development by J. E. H. Roberts, Tudor Edwards, Morrison Davies and others, brought fresh demands upon the hospitals dealing with tuberculosis in some of its stages and an added interest to the lives of those who were employed in this Service.

From the purely administrative point of view the most important change after the war was over was the passing of the Public Health (Tuberculosis) Act, 1921. This Act had a similar purpose to that of the Maternity and Child Welfare Act, 1918, namely, to regularise arrangements for treatment which had received the sanction of the Central Department. The Act, therefore, recognised existing schemes for the treatment of tuberculosis, but it also empowered the appropriate local authorities (the councils of counties and county boroughs) to make arrangements for the after-care of persons who had suffered from this disease. The Public Health (Tuberculosis) Regulations, 1930, consolidated and amended the arrangements for the notification of persons suffering from all forms of tuberculosis, and rescinded the Regulations of 1912, 1921 and 1924.

¹ Page 82.

Apart from advances in methods of treatment which have been referred to above, the principal lines of progress during the 'twenties and 'thirties lay in the detailed improvement of local authorities' arrangements for diagnosis and treatment. Hospital accommodation, rendered available to local authorities in 1930 under the Local Government Act, 1929, began to play its part in the sum total of the facilities available for dealing with this disease. By 1938 there was a pronounced tendency for the average period of treatment to lengthen, and for the waiting-lists of those requiring admission to a sanatorium to increase in size.

Probably the best administered of the local tuberculosis schemes was that of the Lancashire County Council, under the able guidance of Dr. G. Lissant Cox, C.B.E., from 1913 to 1946.

Cox's annual reports on the Lancashire Tuberculosis Service, models of their kind, were based upon the work done in the eight dispensary areas into which the county is divided and they included many valuable special reports on medical and environmental conditions.

In the field of tuberculosis the year 1921 is noteworthy for the introduction of a method of immunisation which is assuming more and more importance as time goes on. The immunising agent referred to is B.C.G. (*Bacille-Calmette-Guérin*) discovered by Calmette and Guérin early in the century. It consists of a bovine strain of the tubercle bacillus attenuated by repeated sub-culture on a glycerin-potato medium with added ox bile.

Calmette claimed that this agent is safe, and it has in fact been used in many thousands of cases without harm. Although extensively used in parts of the Continent, including France, Denmark and Norway, B.C.G. has not, up to the time of writing, been tried in the United Kingdom except on a very small scale. The claims of this preparation, as a result of many years' trial on the Continent, are too strong to be disregarded, and it seems likely that it will soon be used here widely on an experimental basis.

Venereal Diseases

By the end of the year 1938 the number of centres for the treatment of venereal disease (England and Wales) had reached 187. Both in the case of syphilis and of gonorrhoea there was a pronounced tendency for the incidence of these diseases to decline, judged by the returns of the numbers of those attending the treatment centres for the first time. The situation was also more favourable than it had been for many years in regard to deaths from the after-effects of syphilis. As regards general paralysis of the insane, for example,

the crude death rate per million of the male population fell almost continuously from 77 in 1922 to 32 in 1938. The corresponding rate for females, always much lower than in the case of males, fell during the period mentioned from 15 to 10 per million. Deaths from *tabes dorsalis* (locomotor ataxia) in males and females exhibited a similar but rather slower decline in the period from 1922 to 1938.¹ The position in regard to aneurisms was less favourable, there being a slight increase in the crude death rate from this condition in the case of males and a large increase in the case of females.

From the therapeutic point of view, the principal advance in the provision of the weapons with which to combat venereal disease during the period shortly before the second World War, was the large-scale use of members of the sulphonamide group in the treatment of gonorrhoea. By 1938 it was becoming abundantly evident that by the use of these drugs the period of infectivity could be reduced from a few weeks to a few days in the great majority of cases of gonorrhoea, and that the usual complications arising from this disease could be rapidly brought under control. Apart from securing a rapid and permanent cessation of symptoms, the sulphonamide treatment of gonorrhoea possessed the major advantage that, by largely reducing the period of infectivity, it rendered the transmission of the disease to others less likely and thus tended to reduce its incidence. No method of treatment of disease is without its difficulties or disadvantages, and special precautions have to be taken to ensure that patients suffering from gonorrhoea who have undergone sulphonamide-therapy and have been freed of the symptoms of this disease are, in fact, clear of infection.

¹ Annual Report of the Chief Medical Officer of the Ministry of Health, 1938, p. 145.

CHAPTER 3

SOCIAL CONDITIONS IN ENGLAND BETWEEN THE TWO WORLD WARS

If a traveller who had left England in the year 1900 and had not visited the country in the meantime, returned in (say) 1930, he would at once notice enormous differences in the appearance of the people and the aspect of the towns. The old formality in dress—he would at once discover—had completely disappeared, to give place to a pleasing informality and a still more pleasing variety. As far as men's attire was concerned he would notice, possibly with appreciation, the absence of the top hat and frock-coat and the universality of the lounge suit, often accompanied by the soft-collar and the multi-coloured tie. On Saturdays and Sundays he would observe the prevalence of that inelegant mode of attire, the plus fours, then about to give way to the vogue of the sports coat and flannel trousers. He would notice, one is sure with pleasure, the disappearance of the straw-hat and also, in most towns except in the Industrial North, the cloth cap, and their replacement by the almost universal trilby or Homburg. If sufficiently observant, he would note that boots had given place to shoes in the case of both sexes. All this would interest rather than amaze; but his principal astonishment would be concentrated on the revolutionary changes in the attire of the women, both rich and poor, as contrasted with what it had been 30 years before. He would remark that factory operatives and shop assistants had been enabled, by some mysterious means, to dress as attractively, if not as expensively, as their richer sisters. He would become aware that the relative scantiness of women's dress after the close of the first World War symbolised an emancipation from the trammels of convention which nothing but earth-shaking events could have brought about.

The 1914–18 War, although it had assisted to a much greater extent than even the suffrage in the emancipation of women, had brought about an increased disproportion between the numbers of the two sexes, and this was undoubtedly the scarcely perceptible cause of some of the social discontents of that period. Women who were unable to get married, and some who did, entered in increasing numbers the professions and business, and contributed something of value to each. Of the professions open to women, medicine appeared to be one of the favourites, and more and more applied to the medical schools for admission. It is not, perhaps,

surprising that so many young women chose medicine as a profession in view of the opportunities for work amongst women and children which were so readily available. Those first pioneers amongst medical women, Mrs. Elizabeth Garrett Anderson and Dr. Isabella Macdonald, would have been surprised at the ready acceptance by most of the medical schools of a considerable proportion of women in their yearly intake of students, and these worked side by side with men and shared the honours and prizes which were awarded. Few of the women medical graduates entered consultant practice; but many went into the Public Health Service and some into the Civil Service, and there were a number of examples, both before and after the war, of women doctors who attained to high office in central and local government. Disappointingly, few women succeeded in entering Parliament in spite of the fact that more than half the voters were of that sex, and until after 1940 only one had become a Cabinet Minister.¹

Social and economic emancipation, especially in the period between the two world wars, had elevated the mental, and indeed the physical stature of women in the better-off classes, but it had done much less for the wives and daughters of men in the lower income-groups. The lot of the wife of the working man was still a hard one, but even for her, twentieth century civilization had its compensations. She was not, to the same extent as her Victorian ancestor, condemned to perpetual child-bearing, and she possessed luxuries and amenities which were not available even to the rich of the previous generation. Those women who occupied houses or flats built by the local authority—and there were very many erected between the two wars—were in a position to make homes in which they could bring up healthy and happy families. There were available in such a dwelling adequate bedroom and living-room accommodation, a bath, a larder, a gas or electric stove, hot water, a kitchen in which it was a pleasure to work, and—if it was a house and not a flat—a garden. A wireless set was a luxury which most working-class families could afford and this, to many, became one of the great happinesses of life. Attendance at the cinema and at football matches, recreations popular before the war, increased largely in the 'twenties and 'thirties, and in these ways a considerable proportion of the urban population experienced the vicarious thrills of the drama, adventure and sport. The "pictures" and football matches, although an efficient substitute for the *circences* of an older and less humane civilization, constituted

¹ Miss Margaret Bondfield. The late Miss Ellen Wilkinson became Minister of Education in 1945.

a very inadequate outlet for the constructive instincts of those workers, either in factory or in office, who were engaged all day on routine and often repetitious tasks. A small proportion of the male population cultivated allotments insofar as land for these was available within the confines of the industrial towns, and others ran a small car or motor-cycle, on repairs to which they spent many absorbing and profitable hours, as was proper in a mechanical age. The chief disadvantage of life, even in the most sanitary and well-arranged of industrial towns, was the lack of contact with the countryside. Carr-Saunders expresses the view that exclusion from the country intensifies the evils of industrial life. "Country life," he thinks, "influences the physical as well as the mental side of human nature Our senses are adapted to seize upon country sights, country sounds and country smells, and, far-fetched as the suggestion may seem to many people, there is good reason to believe that, when our senses do not receive the stimuli which alone can satisfy them, we are discontented."¹ No doubt the main disadvantage of the lack of contact, or infrequent contact, with the sights, sounds and smells of the countryside is psychological, and this may be one of the factors in the spread of the neuroses—an increasing evil in urban life.

The urban worker in this country in the 'twenties and 'thirties of the present century did, to a large extent, avoid that crushing monotony which afflicted like a plague his ancestor during the Victorian era in the days when there were no pictures, no radio and, perhaps more important than either, no electric light. It is at least conceivable that the plenitude of amusements available in the twentieth century was an important factor in the decline of intemperance—so great an evil during the previous hundred years. But that is not, of course, the whole story, and the reduction in the evil of intemperance, so pronounced in the early years of the nineteenth century, may be ascribed very largely to wise licensing legislation. To-day in this country strict control of premises from which alcoholic drinks are sold or in which they are consumed appears to be a perfectly natural procedure which no one would dream of criticising. It was far otherwise in the later years of the nineteenth century when Parliament was beginning to consider such restrictions on the liberty of the subject as the reduction of the hours during which licensed premises were permitted to be open, and—a subject provoking much bitter controversy—local option. Bishop Magee criticised local option as "utterly immoral, unconstitutional and mischievous"; and, speaking in the House of Lords on the

¹ Carr-Saunders, Sir A. M., *Population*, pp. 101–2.

general question of the legislative control of the sale of alcoholic liquor, he made the famous and often misquoted statement :—“ I must take my choice whether England should be free or sober. I declare, strange as such a declaration may sound, coming from one of my profession, that I should say it would be better that England should be free than that England should be compulsorily sober.”¹ The Bishop was, of course, labouring under a strange delusion if he supposed that the English working man of that time, subject to dismissal by his employer at a day’s notice, was, in any real sense of the term, free. But he was certainly free to get drunk, and often did, and the object of the temperance reformers was the laudable one of removing some modicum of temptation out of his way by the means of licensing legislation, which would restrict his liberty to get drunk to certain hours of the day.

The tendency in the present century has been to reduce very greatly the number of licensed premises and to restrict drastically the hours during which such premises are allowed to be open. Local option, though it has been tried in Scotland, has not found favour in England. The Licensing Act, 1904, as amended by the Licensing Consolidation Act of 1910, had as its main principle the reduction of the number of licences, subject to compensation which was to be paid out of a local fund created by a compulsory levy on the other licence-holders. The principle adopted to justify this levy was that the removal of “ redundant ” licences increases the value of those remaining.

Two experiments in regard to the control of the sale of alcoholic liquor deserve mention. In the period 1862–5 the Liverpool Justices granted licences to all applying who had the necessary legal qualification, with the result that 427 were added to those already existing. The effect of this deliberate policy was that convictions for drunkenness increased from 9,832 or 22 per 1,000 in 1861 to 21,113 or 43 per 1,000 in 1871. Needless to say, the harmful effect of this policy of the justices on the health of the people was very great. The other experiment, which took place during the 1914–8 war and still continues, was an attempt at State management throughout the areas which included Carlisle, Gretna and Cromarty Firth, where there were important munition factories. On the whole, this experiment has been reasonably successful, and it has enabled those who direct the management of the reformed public houses to

¹ Speech in the House of Lords, May 2nd, 1872. Dr. William Connor Magee (1821–1891) was then Bishop of Peterborough. He would, no doubt, have agreed with Dr. Johnson’s remark that there is nothing which has yet been contrived by man by which so much happiness is produced as by a good tavern or inn.

provide amenities which are by no means universal, even to-day, including, from the Public Health point of view, the important requirement of the provision of food. It is to be remarked, however, that the Carlisle experiment has not been extended beyond the original areas. Another deterrent against the excessive consumption of alcohol has been the levying of heavy excise duties on beer and spirits.

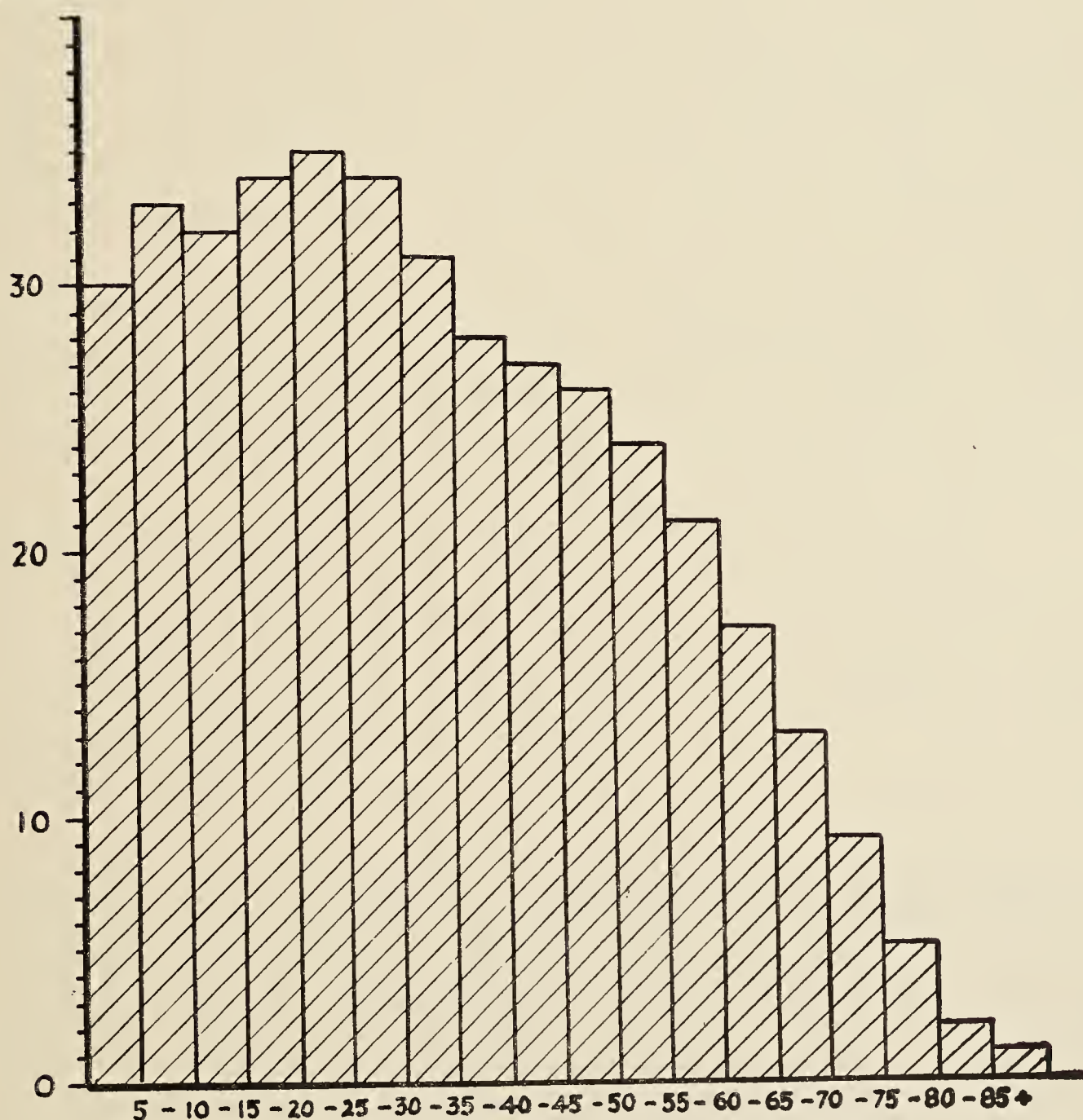
We have often referred in previous chapters of this book to the various death rates, under different categories, which may be employed to serve as an indication of Public Health progress. By the period 1921-5 the crude death rate per 1,000 of the population had sunk to the surprisingly low figure of 12.1. If this be compared with the average figure for the years 1846-50 (23.3), it will be seen how great the improvement had been. The similar figures for the periods 1931-5 and 1936-40 were, respectively, 12.0 and 12.5. An even greater improvement had taken place in the figures for infantile mortality. In the period 1846-50 the infantile mortality rate was 157, whereas in 1936-40 it had gone down to 55.¹ This figure, it will be remembered, remained abnormally high until the end of the nineteenth century, being, for example, as unfavourable in the period 1896-1900 as it had been 50 years previously. What had happened in the first four decades of the twentieth century to reduce the infantile mortality rate, at the end of that period, to one-third of what it had been? There is little doubt that after taking account of improvements in the standards of living, including housing, the main credit for the saving of many thousands of infant lives each year rests with the Child Welfare Services of the local authorities and, in particular, their highly successful efforts to educate the mothers in the industrial areas.

Another mortality figure which shows a remarkably favourable reduction is the tuberculosis death rate (all forms). After the quinquennium 1861-5 the number of deaths from tuberculosis in proportion to the population began progressively to decline, from 3.3 per 1,000 in that period to 0.8 in 1931-5. This reduction, which became marked after the end of the century, constitutes the best statistical proof we possess that the health of the country was progressively improving under the combined influences of a rise in the standard of living, better housing, less overcrowding, and improved social services.

¹ It is to be noted, however, that the neo-natal death rate (infants under the age of one month) had declined to a much smaller extent. Such deaths are mainly due to causes operating before birth. Infantile mortality rates differ according to the social class of the parents. The Registrar-General recognises five such classes.

Perhaps the most unfavourable figure in the vital statistics of the third and fourth decades of the century was the birth rate, which had been 32.8 per 1,000 of the population in 1846–50 and had declined steadily until it reached the depressingly low rate of 14.7 in 1936–40. This meant that the population was no longer reproducing itself, and the shortage of young people was causing a progressive rise in the average age of the population. At the same time the population, although an ageing population, was still increasing, and at the Census of 1931¹ it had reached 39,952,000 (England and Wales). In the absence of a marked increase in the

100,000's



POPULATION BY AGE-GROUPS.
ENGLAND AND WALES, 1931.

FIG. 6

¹ The Census of 1931 was the last undertaken in this country, that due in 1941 being omitted owing to the war.

birth rate, there would be no possibility of this population being maintained. Kuczynski, who has introduced the statistical conception of gross and net reproduction rates, calculated that in 1939 the latter figure was 0.75, which means that the population, on the basis of the number of births and deaths at that time, was only three-quarters reproducing itself.¹ During the 'twenties of the present century general interest in the problem of the changing age-distribution of the population began to show itself, stimulated by the slow but steady decline of the birth rate. Works by Carr-Saunders, Pearl, East and Enid Charles showed that the factors influencing the growth or decline of the populations of nations were of the most complex character. Enid Charles in her book *The Twilight of Parenthood* argues that the study of the growth of human populations belongs to the domain of the science of ecology, and that only by an investigation into all the ecological relationships into which man enters can the optimum size of the world's population be determined. Such an analysis of the habits, modes of life and relationship to their surroundings of the population of this country in order to discover the reasons for the decline in the birth rate had not yet been undertaken at that time.² Glass, in 1937, published statistics upon which, on various assumptions, an attempt was made to estimate the decline in the population which might be expected to take place at different periods in the future.

The subject of the possible future decline of the population became of interest to the Royal Commission on the Geographical Distribution of the Population because of the danger, within a measurable period of years, of the number of persons of working age somewhat rapidly declining. In a memorandum presented to the Royal Commission in 1939, the Registrars-General of England, Wales and Scotland attempted to indicate what might be the possible

¹ Kuczynski, Robert René (1876–1947). Was educated at the universities of Freiberg, Munich, Strasburg and Berlin. From 1906 to 1921 he was Director of the Statistical Office of the Schoeneberg district of Berlin; and from 1926–32 served as a member of the council of the Brookings Institution, Washington. Kuczynski, whose main interest was in demography, published in 1928 *The Balance of Births and Deaths*, one of his important contributions to the theory of population. Coming to England in 1933 as a political refugee from Germany, Kuczynski was given a research fellowship at the London School of Economics, and became the first holder of the post of Reader in Demography at the University of London, retiring in 1941. He became Demographic Adviser to the Colonial Office in 1944, and held this post up to the time of his death.

² The Royal Commission on Population, appointed in 1937, may be expected to take full account of these considerations. Dr. Enid Charles estimated, on the assumption that fertility and mortality trends did not change, that in the year 1975 the population of England and Wales will have fallen to 31 millions and by 1995 to 20 millions.

normal type of distribution of the population of the United Kingdom in the future, adding, however, that "the contingency of a national war or other major cataclysm has perforce been ignored." On the basis of past and present trends, the Registrars-General estimated that a population maximum of between one and two millions in excess of the 1939 figure of 46,000,000 might be expected to be reached during the 1951-60 decade. The age-distribution of this population would, according to their calculations, vary significantly in the later years as compared with 1939, the numbers in the age period "over 65" more than doubling themselves in the following 34 years.

Speculations upon the probable trend of the population, both from the point of view of size and of age-distribution, were of great interest to those engaged in the Public Health Service, since the numbers appearing in the various age-groups at certain periods in the early future would influence the policy of local authorities in regard to the provision of buildings, equipment and staff. An increase in the number of people reaching the age of 65 or 70 would involve the organisation of additional accommodation for old people; a reduction in the birth rate over a period of years might materially affect the structure of the maternity and child welfare service; and a shift of the distribution of population from the lower to the higher age-groups might be expected to alter the incidence of a number of diseases, necessitating changes in the provision of hospital beds. The fact that a larger proportion of the population was reaching the age at which cancer is prevalent was the principal cause which led to an increased interest in cancer research in the period between the two wars, and to the passing of the Cancer Act in 1939.

Another feature of importance to the student of Public Health in this period was the emergence of the idea of Social Medicine as a subject which envisaged the inter-relations between Preventive Medicine and Social Science and studied the influence of the one upon the other. The pioneer Chair of Social Medicine was founded under the auspices of the Nuffield Trust at Oxford on April 1st, 1943, with Professor J. A. Ryle as the first occupant. The project of founding a Chair of Social Medicine was first raised by Sir Arthur MacNalty in 1939, shortly before he retired from the office of Chief Medical Officer of the Ministry of Health and Board of Education. In 1942 this valuable suggestion was taken up by the Trustees of the Nuffield Provincial Hospitals Trust, and received the support of the late Sir Farquhar Buzzard, then Regius Professor of Medicine at Oxford. The Trust decided to allocate funds for the establishment

of a Chair and an Institute of Social Medicine at Oxford, in the first place for a period of 10 years. Amongst the purposes of the Institute, according to the resolution of the Trustees, were the following objects :—

- (a) To investigate the influence of social, genetic, environmental, and domestic factors on the incidence of human disease and disability.
- (b) To seek and promote measures, other than those usually employed in the practice of remedial medicine, for the protection of the individual and of the community against such forces as interfere with the full development and maintenance of man's mental and physical capacity.¹

Social Medicine, as an academic subject which extends the sphere of Preventive Medicine by investigation and research, may prove of value because it transcends the boundaries of administrative machinery, taking into account *all* the factors which may influence, directly or indirectly, the health of the community. "The subject of Social Medicine may therefore in the future contribute towards the health and well-being of the community by clarifying and then emphasising the precise part which each of the influences affecting the individual (*e.g.*, education, work and the standard of living, marriage, housing) plays upon the physical and psychological make-up of the average citizen. Knowledge of this kind, supplementing the great advances in medicine which are now taking place, may be confidently expected to increase our powers of controlling disease and of ensuring a larger measure of positive health to the individual."² One of the sources of the raw material for the worker in the subject of Social Medicine consists of the surveys which have been undertaken in the poorer quarters of some of the industrial towns, mainly during the period between the two World Wars. The two social surveys of outstanding significance during the nineteenth century were those by Charles Booth and B. Seebohm Rowntree, and the results of these comprehensive investigations into the lives of the common people in London and York were to bring an understanding to those more fortunately placed of the problems and needs of the very poor. Out of this understanding arose, during the course of the years, social insurance and the Personal Health Services.

During the period between 1925 and 1935, when rates of unemployment were high in many areas, a number of social surveys

¹ I am indebted to Professor Ryle for this information.

² Frazer, W. M., and Stallybrass, C. O., *Textbook of Public Health*, 11th Edition, p. 2.

were undertaken in the industrial towns with the object of ascertaining the impact of this new type of poverty upon the lives of those who were existing upon subventions from the State. One of the areas in which unemployment was both widespread and intractable was Liverpool, and perhaps the most careful of all the surveys undertaken at that unfortunate time was the one carried out by a group of social workers under the leadership of Mr. D. Caradog Jones of the Social Science Department of the University of Liverpool. The report of this group, issued in three volumes in 1934, traversed the whole of the economic, industrial and domestic circumstances of the great mass of population living on Merseyside and existing largely upon the trade passing through the port. That this survey was of the most detailed character, embracing the past as well as the present, is indicated by the subjects dealt with in these volumes. The first volume gives some account of the history of the development of the area, the distribution of the population in regard to age, sex and marital condition, and the evolution of municipal housing in Liverpool. In the second volume a detailed examination is made of the industrial character of Merseyside, including trades dependent upon the port; and the non-occupational sides of the life of those dwelling in this cluster of towns are described in the third volume, which also gives an account of the local government activities of the area and the provision of social services.

Mention has already been made of Seebohm Rowntree's social survey of York, the results of which were published in 1901 under the title *Poverty: a Study of Town Life*. That survey receives added interest from the fact that in 1935 Rowntree decided to repeat this investigation in order to ascertain what changes had taken place in the industrial and social lives of the people of York during the 36 years which had elapsed since the original inquiry. The results of the second survey were published by Rowntree in the year 1941 under the title of *Poverty and Progress*. The basis of this survey was a house-to-house investigation which finally covered 16,362 families—nearly the whole of the working-class population of the City. That fact, in itself, makes this social survey unique. As in the investigation which took place in 1899, Rowntree in 1936 paid particular attention to that most important of all social problems, the question of poverty. In *The Human Needs of Labour* (1937) Rowntree, after a careful study of all the factors,¹ came to the conclusion that the "poverty line" could be fixed at the standard of living attainable by a man, wife and three children (at 1936 prices

¹ See p. 397 of this book for information about the scale of allowances paid by the Unemployment Assistance Board.

and after paying rent) on a wage of 43s. 6d. a week. "Primary poverty," a term used in both the 1899 and 1936 surveys, is represented by the minimum sum on which physical efficiency could be maintained, which is, of course, much lower than that denoting the poverty line. In the 1899 investigation that sum was 17s. 8d. inclusive of rent, while in the later survey, with changes in the value of money, the corresponding figure was 30s. 7d. for urban families of five. As regards the proportion of the working-class population living under conditions of primary poverty, the figure of 15.46 per cent. in 1899 had fallen to 6.8 per cent. at the time of the second survey.

In a report packed with statistical information, some of the most significant figures are those in regard to the number of years during which children live under conditions which are below the poverty line; and the author emphasises the physical harm which is sustained by those who, during the period of growth, spend several years under such conditions. In York, at the time of the second survey, 52.5 per cent. of children under one year of age, 49.7 per cent. of those over one and under five, and 39.1 per cent. of those over five and under 15 were living below the poverty line.¹ Both heights and weights of boys and girls in the poorest categories had increased to a material extent between the first and the second surveys.

Apart from the reduction of the proportion of the working classes living in abject poverty from 15.46 per cent. to 6.8 per cent. between the two periods, Rowntree stresses the substantial increases in real wages which had occurred, notwithstanding the fact that hours of work had been much reduced. "I suggest that we should probably not be very far wrong if we put the standard of living available to the workers in 1936 at about 30 per cent. higher than it was in 1899."² That was the justification for the amended title of the second survey.

The social surveys in respect of Liverpool and York have been given as examples of this kind of investigation during the period between the two wars. Professor Bowley and others, on the basis of random sampling of the working class populations, have undertaken surveys in Northampton, Warrington, Stanley, Reading and Bolton. The largest inquiry of this kind was undertaken in London and reported upon in *The New Survey of London Life and Labour* [9 vols.] published between 1930 and 1935. Surveys have also taken place in Bristol and Plymouth.

¹ Rowntree, B. Seebohm, *Poverty and Progress*, p. 156.

² *Ibid.*, p. 453.

The Peckham Experiment

Those who have organised the Peckham Health Centre consider that they are pursuing an inquiry into the new field, as far as human beings are concerned, of applied biology. They claim that they are not studying pathology, for that science is solely concerned with disease, nor physiology, because that subject deals with isolated functions, but with the normal man in the ordinary circumstances of life and his environment. Because, in the view of the pioneers who originated the Peckham experiment, the study of health is a biological problem they essayed the tentative definition of "health" as "the physiological condition of an organism living in mutual synthesis with its environment."¹ But health, so they argued, was not a condition which was studied in the medical schools or hospitals. By the time a person had reached a hospital he was suffering from an *incapacitating* disorder in an advanced stage and far removed from a condition of health.

The Peckham experiment began by the meeting of a group of young people who had become convinced that health was worth studying. Being laymen they sought advice from those who possessed at least some scientific knowledge of this subject, and, together, they decided to offer to families a health service on the pattern of a Family Club, with periodic health overhaul for all its members and with various ancillary services for infants, children and parents alike.²

Thus, in 1926 the Pioneer Health Centre, Queen's Road, Peckham, London, S.E., commenced its work in a small way in a converted house. The unit was the family and not the individual, and families could join this Family Club at a small weekly subscription. Very soon it was recognised by the medical and lay workers that much more than periodic health overhauls was required. "Instruments of health" were also necessary. This was the first stage of the Peckham experiment and some years were spent in planning the next stage—a Health Centre to cater for as many as 2,000 families. In *The Case for Action* Drs. Innes Pearse and G. Scott Williamson describe the work of the first Health Centre and the course of the planning for the second. The second book, *Biologists in Search of Material*, published in 1938 after the new and enlarged centre had been in operation for 18 months, is intended to serve as an interim report of the staff, but it has some very significant observations to make upon health and disease. "The primary diagnostician is the sufferer." "There may be a wide

¹ *Biologists in Search of Material*, p. 20.

² Pearse, Innes H., and Crocker, Lucy H., *The Peckham Experiment*, p. 11.

lapse of time between the sufferer's diagnosis of disease and his diagnosis of social incapacity." "Disorders do not always cause disease; they may remain masked by a sense of well-being." "Hence the recognition of well-being as a cloak covering every kind of disorder is of primary importance."¹

The facilities at the new Centre are many. Remembering that it is a club we are not surprised to find a billiard room, swimming bath, gymnasium and cafeteria. There are consulting rooms, a Physiological Department and a nursery. Women and young children use the Centre from early afternoon, older children coming from school a little later, and fathers and the young adolescents in the evening. Throughout the day, the building hums with the manifold activities of the old and the young. All of them are looked after and cared for, physically and mentally, by the medical and lay staff of this truly pioneering Health Centre.

A Renewed Attack upon the Slums

In Part IV, chap. 4, the account of the post-war housing drive had reached the stage of the passing of the Housing Act, 1925, which made some useful changes in the general law relating to this subject. It was inevitable during the years following the 1914-18 war that the resources of the community should be devoted to the building of additional houses as a partial compensation for the cessation of building during hostilities. Slum clearance was, therefore, neglected. In 1928 the National Housing and Town Planning Council appointed a powerful Committee to report upon the slum problem in all its phases, with special reference to the housing of the lowest paid workers. The report of this Committee emphasised that the feat of building 1,200,000 houses since the end of the war had done little to reduce the dimensions of the slum problem; and recommended that a new programme should fulfil the following purposes:—

- (a) To relieve overcrowding.
- (b) To enable unfit houses to be closed.
- (c) To enable a start to be made on the clearance and improvement of unhealthy areas.

During the later years of the 'twenties, the number of houses built each year by local authorities for the purpose of renting to members of the working classes, under the Wheatley Act, had begun

¹ *Biologists in Search of Material*, pp. 92-3. The new Centre was made possible through the benefactions of the Halley Stewart Trust. Miss Innes H. Pearse, M.D., and Dr. G. Scott Williamson have been associated with the Peckham Pioneer Health Centre since its foundation in 1926.

to decline, and there seemed to be little likelihood that any improvement in this unfortunate situation would take place. In the meantime, the building of houses to be bought by the middle classes had proceeded rapidly, and more and more of the capacity of the building industry was being devoted to this purpose. It is indeed clear that housing legislation up to that time had failed to solve the three urgent problems—the reduction of overcrowding, the demolition of insanitary property, and the building of sufficient houses and flats to accommodate families dispossessed by these operations. As a result of the large number of Housing Acts passed since the end of the war, both Parliament and the Ministry of Health had gained much experience of the pitfalls which beset those who attempt to draft legislation dealing with this complicated subject; and in the early years of the 'thirties the time was ripe for the introduction of a comprehensive Bill covering all aspects of the housing problem. Various estimates have been given as to the number of insanitary houses in the country at that time. The outside estimate, according to Sir Ernest (now Lord) Simon,¹ was 4,000,000 but, as he emphasises, that would depend upon the definition of a slum. "In other words, a slum is what the Medical Officer of Health of the district concerned believes to be a slum."²

What was beyond doubt, however, was that the slum evil in many of the industrial towns, especially London, Liverpool and Glasgow, was of vast dimensions, and that much harm to the Public Health was being caused by the delay—inexplicable to many people—in dealing with this problem as a matter of the greatest possible urgency. To the great relief of those who were interested in slum clearance the Government introduced a Bill on this subject into Parliament, which became the Housing Act of 1930. This Act was not the comprehensive measure referred to above; it did not, for example, deal adequately with overcrowding. But it facilitated to a considerable extent the demolition of insanitary housing property by prescribing a definite and reasonably expeditious procedure for the formation of clearance areas and improvement areas. The procedure for declaring a clearance area was similar to that in the 1890 Act, but there was a proviso in the new Act which made it necessary that the local authority should provide in advance housing accommodation for those to be dispossessed. One great advance in this Act, as contrasted with housing legislation in the previous century, was the adoption of the principle that no compensation should be paid to owners in respect of the demolition of

¹ Simon, Sir Ernest D., *The Anti-Slum Campaign*, p. 125.

² *Ibid.*, p. 123.

insanitary houses. This principle had been accepted for many years in connection with food found to be unfit for human consumption, and, applied to unfit housing, its acceptance by the legislature undoubtedly avoided the high cost of compensation which exercised such a deterrent effect upon slum clearance in the nineteenth century.

Another salient feature in the 1930 Act was the introduction of the idea of dealing with large areas, containing many unfit houses, as "improvement areas." The procedure of forming improvement areas was thought to have the advantage that it would be peculiarly suitable for adoption in the older industrial towns, parts of which, in the process of time, had become decayed and derelict. Power was therefore given to local authorities to do three things in connection with improvement areas—(i) to demolish or repair dwelling-houses unfit for human habitation, (ii) to purchase land and demolish such buildings as might be necessary, and (iii) to abate overcrowding in the area. No definition was given as to what constituted overcrowding, and this administrative difficulty, experienced for so many years in connection with the Public Health Act, 1875, was not therefore overcome in the new Housing Act. The improvement area procedure, admittedly experimental, was never adequately tried out, as this method was largely superseded by the "re-development area" procedure to which legislative sanction was first given in the Housing Act, 1935.¹ The re-development area procedure was of very wide application, applying not only to dwelling-houses, as did the improvement area, but to all other buildings as well. By this method, therefore, the whole of a large area of 50 or 100 acres or more could be completely re-planned, providing wider streets, up-to-date industrial premises of all kinds, and modern dwelling-houses or flats.

The Housing Act, 1935, is noteworthy because, for the first time, it provided a statutory definition of overcrowding in connection with dwelling-houses, and it laid upon local authorities a specific duty to make proposals to the Minister for the abatement of overcrowding. The definition, which is a complicated one, depends upon, (i) the separation of the sexes as regards sleeping accommodation, and (ii) the number of persons permitted to use the house for sleeping, expressed either in relation to the number of rooms or the floor area of the rooms, whichever is the less. A notice of the "permitted number," for the purposes of sleeping, in respect of every house, was required by the Act to be inserted in the rent book.

¹ Another interesting feature of the Housing Act, 1935, was the formation of a Central Housing Advisory Committee.

The inspections for the purpose of obtaining information about overcrowding in each area imposed a considerable strain on the staffs of Public Health Departments as they involved the measurement of rooms.

By the end of the financial year 1935-36 considerable progress had been made in the five-year programme of slum clearance undertaken under the 1930 Act. During the period from the passing of the Housing Act, 1930, to the end of the financial year 1935-36, 9,033 Clearance Areas containing a total population of 623,410 persons had been declared by 719 local authorities, and, of these, Clearance Orders amounting in number to 5,183 and involving 276,545 persons had been confirmed by the Minister of Health.¹

The Government's housing programme was at that time being undertaken under three headings, namely, (i) the clearance or other appropriate treatment of unfit houses and the effective rehousing of those dispossessed, (ii) the abatement of excessive overcrowding and the rehousing of the overcrowded families, and (iii) the assurance of an adequate regular production of good and cheap houses to meet ordinary working class demands outside the slum and overcrowding sphere.² The method of production of houses to meet the general needs of the working classes varied, of course, with the type of need. In general, the responsibility in respect of the provision of houses to cover slum clearance and overcrowding devolved upon local authorities, and, because of the economic position of the poorer people who were displaced by such housing operations, heavy subsidies were payable partly from central sources and partly from rates. In the case of houses built to meet the general needs of the working class population, the Government relied upon private enterprise. By the end of the year 1935-36 the total number of houses completed by local authorities under the Housing Act, 1930, had reached a total of 79,934. There had been an acceleration of house building by local authorities since 1933, and during the year ending March 31st, 1936, 52,315 houses were constructed under their schemes.

Figures of building by private enterprise were even better. During the year referred to, the number of houses built by private enterprise without State assistance reached the high figure of 271,389. Many of these houses were built for occupation by persons in the higher income groups; but the greater proportion was of comparatively low rateable value. Included in the total were 99,108 of a rateable

¹ Annual Report of the Ministry of Health, 1935-6, pp. 77-8.

² *Ibid.*, p. 71.

value of £13 (£20 in Greater London) or less, and 138,791 of a rateable value exceeding £13 but not exceeding £26 (£21 to £35 in Greater London).¹

The type of house built by local authorities to meet the needs of those dispossessed by slum clearance operations varied a good deal. Families rehoused might consist of a single person or a man and wife and many children. Small families were, however, in the great majority owing to the heavy fall in the birth rate after the first World War. The normal kinds of houses erected under local authorities' schemes were the two and three-bedroom non-parlour types with a superficial area of 650 and 760 square feet respectively. A small proportion of houses with four bedrooms were also provided for tenants with exceptionally large families; and approval was sometimes given in exceptional circumstances to the parlour type of house. Some authorities erected houses of experimental design for the accommodation of old people. In the larger towns such as Manchester, Leeds, Birmingham and Liverpool, there was a pronounced tendency to build blocks of tenements in the older and more built-up areas for the purpose of re-housing families the breadwinner of which had to live near to his work. The average building price of the non-parlour type of house during 1935 was £310.

The opportunity was taken in the Parliamentary session 1935-36 to introduce a measure which, without containing any important new principles, consolidated the Housing Acts, 1925 to 1935, and included certain additional provisions relating to housing. This was a useful administrative measure as it enabled the many committees and officials dealing with housing all over the country to find their law in one Act of Parliament instead of several. The Housing Act, 1936, consists of a number of parts dealing, *inter alia*, with repair and maintenance, clearance and re-development, overcrowding, the provision of housing accommodation for the working classes, and finance.

During the few years which remained before the outbreak of war, housing progress was not only maintained, but even accelerated. Indeed, amongst all the factors which conduced towards the health and well-being of the people of this country during the past 100 years, the housing drive which was pressed forward with all possible speed between the years 1925 and 1939 takes a very high place. The nation had at long last realised that good housing was one of the most fundamental needs of the people and had been impelled to devote a large share of its available capital resources to the satisfaction of that need. No one would say that the Annual

¹ Annual Report of the Ministry of Health, 1935-6, p. 82.

Reports of the Ministry of Health are ever given to hyperbole or exaggeration, but even this calm and judicial publication was moved to observe, in 1939, that "the production of houses by Local Authorities and others under the Acts has been remarkable."

The original five-year programme of slum clearance under the Housing Act, 1930, was completed in the year 1937-38, but the campaign continued. Up to March 31st, 1939, 241,889 houses had been demolished and approval had been given by the Ministry to the erection of 308,536 replacement houses, of which 273,390 had been completed.¹ By 1939 some progress had been made in the abatement of overcrowding under the Housing Act, 1935. As a result of the survey by local authorities, undertaken in 1936, it had been disclosed that there were 341,554 cases of overcrowding. Up to March 31st, 1939, 30,415 houses had been approved for the abatement of overcrowding, and 23,915 had been actually erected.

By March 31st, 1939, the grand total of houses built in England and Wales since the Armistice had reached the most gratifying figure of 3,998,366. Of these 1,112,544 were built by Local Authorities, 430,481 by private enterprise with State assistance, and 2,455,341 by private enterprise without State assistance. The great majority of these houses (83.1 per cent.) had a rateable value not exceeding £26 (£35 in Greater London).²

Many of the houses built for the purpose of purchase by the owner-occupier were financed through the help of building societies, the affairs of which were regulated by the Building Societies Act of 1836 and, later, by the Building Societies Acts of 1874-94. These societies grew slowly in importance during the nineteenth and the early part of the twentieth century, but after the 1914-18 war their activities began to assume additional importance with the great demand for houses on the part of all sections of the community. As an indication of the phenomenal growth of the building society movement during that period, it may be mentioned that in 1913 the amount advanced to borrowers was approximately £9,000,000 whereas in 1929 it was nearly £75,000,000, and in 1937 about £137,000,000.³

Although, generally speaking, the building of accommodation for the working classes was undertaken enthusiastically in the towns after the first World War, rural housing had never become an object of equal interest. This is, perhaps, not entirely surprising in a civilization which is predominantly urban. But the lack of adequate

¹ Annual Report of the Ministry of Health, 1938-9, p. 82.

² *Ibid.*, pp. 86-7.

³ *Ibid.*, p. 89.

housing for the agricultural labourer, during many generations, has been one of the causes which have tended to drive the rural worker into the towns, and it has contributed markedly to the decay of agriculture. The rural labourer, often tied to a cottage owned by his employer, has indeed possessed even less economic security than his fellow worker in the town. But the fundamental difficulty which faced the Ministry of Health, in its attempts to improve rural housing, was the low rent-paying capacity of the agricultural labourer. The Housing (Rural Workers) Acts, of which the first was passed in 1926, were not so much housing Acts as finance Acts, by which an attempt was made, through the provision of special subsidies, to encourage the building of new cottages, or the improvement of existing ones, for occupation by families whose breadwinner was working on the land. Such generous subsidies as were granted by the Exchequer for this purpose were made in accordance with the recommendations of the Rural Housing Sub-Committee of the Central Housing Advisory Committee, which had reported that there was "a serious shortage which . . . can only have a most unfortunate effect on the well-being and contentment of the agricultural population," and that "a large number of existing cottages . . . do not offer the standards of hygiene, amenity and comfort which a young family may reasonably expect."¹

Subsidies in respect of rural housing were indeed generous. The Housing (Financial Provisions) Act, 1938, made an Exchequer contribution of £10 a year for 40 years in respect of each house built by a local authority for the agricultural population, whether for slum clearance, the relief of overcrowding or for general needs. To this was added a subsidy of £1 a year for 40 years by the local authority, with the result that the capitalised value of both contributions amounted to £250 and enabled the cottage to be let at between 3s. and 4s. a week, excluding rates. Unfortunately, these generous arrangements which would, in the course of a few years, have revolutionised the life of the country labourer, were made too late to be of much assistance before war was declared in September, 1939, and the building of houses postponed for an indefinite period.

¹ Annual Report of the Ministry of Health, 1937-8, pp. 108-9.

CHAPTER 4

PUBLIC HEALTH IN THE PERIOD PRECEDING THE SECOND WORLD WAR

In the earlier part of the period between the two wars Public Health legislation was restricted to the fulfilment of immediate needs, and for some years after the establishment of the Ministry of Health no attempt was made to alter or even to consolidate the existing law on this subject. The new Ministry was faced with the duty of completing its own organisation, of getting on terms with Parliament, and of initiating a housing drive which was to take up so much of the time of the Department during the next 20 years. Major legislation, apart from housing, was therefore out of the question during the early 'twenties and it was not until 1929 that the first important Act of Parliament attributable to the Ministry of Health, and dealing with Local Government and Public Health organisation, was passed. This was the Local Government Act, 1929, which is considered in Part V, chapter 1.

But although legislation of first-class importance had, perforce, to be postponed, much useful work was done by the Ministry in the first few years after the war, including the introduction of measures relating to the care of the mother and the young child, and to blind persons, smoke abatement and other matters. An Act amending the Midwives Act, 1902, had been passed in 1918 and there were further additions to and amendment of the law relating to this subject in the Midwives & Maternity Homes Act, 1926¹. It will be remembered (p. 246) that the first Act relating to infant life protection was passed in 1872. In the present century the most important early legislation on the care of children and young persons was the Children Act, 1908. Further evidence of the growing interest taken by the State in the child was the first statutory provision for the legal adoption of children contained in the Adoption of Children Act, 1926.² The Legitimacy Act, 1926, based upon the old Roman Law principle of *Legitimatio per subsequens matrimonium* came into force in January, 1927. This Act was founded upon the condition that the parents of the child were free to marry at the time of its birth.

¹ Also, later, the Midwives Act, 1936 (p. 418).

² Amendments and additions to this Act were contained in the Adoption of Children (Regulation) Act, 1939, which did not come into force until 1943.

The Public Health (Smoke Abatement) Act, 1926, adding to the powers contained in the Public Health Act, 1875, enabled local authorities to make by-laws in relation to the emission of smoke.

All this legislation of an administratively useful character was but a preliminary to the great series of statutes for which the Ministry of Health was mainly responsible in the years immediately preceding the second World War. The Acts of Parliament to which reference is being made were the Public Health Act, 1936, the Housing Act, 1936, and the Food and Drugs Act, 1938.

From the point of view of this book the most important of these Acts, as affecting directly the work of both Environmental and Personal Hygiene, was the Public Health Act, 1936, which replaced the great Public Health Act of 1875. The Act of 1875, which was one of the first fruits of the creation of the Local Government Board and in the drafting of which Sir John Simon was concerned, had had legislative existence for the long period of 61 years, and under its provisions the towns of this country had been sewered and drained, copious supplies of pure water had been obtained, and urban life had become secure and healthy. The Public Health Act, 1875, one of the greatest Acts of Parliament of the nineteenth century, stands upon the same high pedestal as the Reform Act of 1832, the Education Act of 1870, and the Housing Act of 1890. But the Public Health Act, in one aspect, was greater than these because it continued operating, virtually unchanged, for nearly two-thirds of a century.

Just as the Public Health Act, 1875, was a compilation of the best features of the sanitary measures passed between 1848 and that date, so the Act of 1936 was a consolidation of the Public Health legislation, covering a very extensive field, which Parliament had enacted over a period of more than half a century. Much had happened in the sphere of Public Health since, for example, the passing into law of the first of the Infectious Diseases Notification Acts. There had been legislation relating to an extensive series of subjects which, together, constituted the Personal Health Services. These enactments had dealt, to an extent dictated by administrative requirements at the time they were passed, with the notification of infectious diseases and of births, and with midwives, the care of mothers and young children, the protection of infant life, venereal diseases, and tuberculosis. The Public Health Act, 1936, embracing both Environmental and Personal Hygiene, was complete in itself and is destined, it may be supposed, to become the "bible" of all those who work in this field.

The third great Act passed at this legislatively fertile period was

the Food and Drugs Act, 1938. This Act, consolidating previous legislation on this subject, is divided into two main parts—dealing with the inspection of food on the one hand and the sampling of food and drugs on the other. This comprehensive enactment was based upon recommendations contained in the Third Interim Report of the Local Government and Public Health Consolidation Committee, which had reviewed the legislation on the subject extending from the sixteenth century onwards. Besides containing the main parts of the Food and Drugs (Adulteration) Act, 1928, the Milk and Dairies Acts and the provisions in the Public Health Acts relating to food, markets, slaughterhouses and knackers' yards, the new Act incorporated the substance of a number of local Act clauses and it gave effect to the recommendations of certain Committees.

Another activity of the Ministry of Health which proved of great value to local authorities in the 'thirties was the institution of hospital surveys. The Local Government Act, 1929, had transferred to local authorities little used to the administration of large hospitals the responsibility for all the Poor Law institutions. Although the surveys were conducted in pursuance of section 104 of that Act, which provided that the Minister might reduce a local authority's block grant if he was satisfied that the authority had failed to achieve or maintain a reasonable standard of efficiency and progress, the main purpose of the surveys conducted by experienced Medical and Nursing Officers of the Department, was to help and advise. There is little doubt that the comparatively high standard of efficiency in hospital administration reached in many areas by 1939, which proved of priceless value during the war, was due in some part to the very willing help given by the officials of the Ministry towards the solution of the many problems involved in the upgrading of these institutions.

It should be emphasised, nevertheless, that the main burden of thought and responsibility for hospital progress between 1930 and 1939 rested upon the shoulders of members and officials of local authorities. These authorities had not only to undertake the highly complicated task of planning improvements in the standards of equipment and staffing of many types of hospitals, but they had also to bear the heavy financial burden involved.

In the county boroughs the procedure of appropriation, by which Poor Law institutions of a suitable type became general hospitals administered under the Public Health Acts, was relatively easy and much progress had been made in this direction by 1939. The counties were not, as a rule, so fortunately placed, as much

of their hospital accommodation was contained in small mixed institutions the dual functions of which were not easily separable.

A few towns, especially those with Medical Schools, such as Manchester, Oxford and Liverpool, had set up Joint Hospital Advisory Boards for the purpose of consultation between local authorities and voluntary hospitals as required by the Local Government Act, 1929, and, later, the Public Health Act, 1936. The Sankey Commission, reporting in 1937, recommended a much further degree of co-operation and association between the voluntary hospitals themselves. In some areas the need for agreement between voluntary hospitals in regard to fundamental local policy had long been felt and this was seen, for example, in the building of the Queen Elizabeth Hospital, Birmingham, and in the grouping, under statutory powers, of the four Liverpool voluntary general hospitals under the title of the Liverpool United Hospital.¹

The grouping of hospitals into Regions, recommended in the Sankey Report, became part of the policy of the Nuffield Provincial Hospitals Trust.² An attempt by this Trust to organise some Regional grouping of both municipal and voluntary hospitals, on an advisory basis, was made in 1938 and 1939 ; but it appeared sounder policy to institute comprehensive surveys of all hospitals on a basis of a provisional regional grouping, as a first step, rather than to deal at once with their organisation. These surveys were not, however, undertaken until late in the war period.

Public Health Organisation.—In the earlier pages of this chapter a brief account was given of the main parts of the legislative framework within which the Public Health Service worked in the period between the two wars. Administratively, the Public Health Services were governed at the centre by the Ministry of Health and at the periphery by the various kinds of local authorities established by legislation passed in 1882, 1888 and 1894.³ The most ample Public Health powers were enjoyed by the county boroughs which have possessed, since 1888, the largest measure of autonomy of all local authorities, being responsible only to the Ministry of Health. County boroughs carry out all the usual Public Health functions in their areas, while county councils share responsibility for such services with county districts, which are municipal boroughs, and urban and rural district councils. This two-tier system of local government,

¹ Liverpool United Hospital Act, 1937, with which Mr. (later Sir Richard) Armstrong was closely associated.

² This is a fundamental principle of the National Health Service Act, 1946.

³ The Municipal Corporations Act, 1882, the Local Government Act, 1888, and the Local Government Act, 1894.

as it is now called, possesses the advantage that it can be applied to very large areas containing authorities differing widely in population and financial resources. Its essence is division of Public Health and other functions between the county council as the upper tier and the district councils as the lower tier. Functions discharged by the county councils directly were, for example, hospitals, tuberculosis and venereal diseases schemes, midwives, and the Cancer Act, 1939; while the county districts were responsible for sanitation, the care of the mother and the young child and, if possessed of a sufficient population, the Shops Acts and the Food and Drugs Act, 1938.¹

The Medical Officer of Health of a county borough or a county council, responsible for the discharge of the ever-increasing Public Health functions placed by Parliament on the shoulders of these local authorities, has had to carry out duties of a most complex and arduous character. Responsible for the administration of hospitals, he had under his charge large staffs of a most varied type ranging from senior medical officers, through the ranks of the nursing staff, to engineers, storekeepers and porters. If in charge of a large county or city, the staff engaged in the hospitals for which he was responsible might amount, in total, to several thousand persons. Duties in respect of maternity and child welfare, tuberculosis, venereal diseases, sanitation, food and drugs, blind persons and the many other activities of his Department, including in nearly all cases the School Medical Service and in a few a Port Health Service, added to the sum total of the Medical Officer of Health's functions and to the cares of his arduous office. In the event of an epidemic of a severe type of infectious disease, such as typhoid or smallpox, the Medical Officer of Health of the district in which it occurred might for days or weeks carry a greater load of responsibility than any other single individual in the area. During the period before the second World War there was a pronounced tendency for Medical Officers of Health to concentrate their attention on the Personal Health Services, and to lose interest in the older subject of sanitation.

The organisation representing the interests of medical officers employed in Public Health Departments is the Society of Medical Officers of Health, which was founded in 1856 as the Metropolitan Association of Medical Officers of Health (p. 235). The Society, although constitutionally independent of the British Medical

¹ Considerable changes have taken place in the allocation of functions as between county councils and county districts as a result of the coming into force of the National Health Service Act, 1946.

Association, maintains a close co-operation with that organisation and thus with the bulk of the profession which it represents; and some of its members sit upon such committees of the Association, including the Public Health Committee, as may be concerned with local authorities' services. An agreement made in 1923 between the Society and the Association charges the latter with the duty of negotiating with local authorities questions relating to the salaries of Medical Officers of Health and other Medical Officers employed in Public Health Departments. It was under this arrangement between the two professional bodies that negotiations took place in 1929 between the British Medical Association and the Associations representing local authorities, under the chairmanship of Lord Askwith, which resulted in the well-known Askwith Memorandum.¹ This Memorandum contained salary scales which set the standard of remuneration of medical practitioners employed in Public Health Departments during the period from 1929 until after the second World War.

Amongst the many activities of the Society of Medical Officers of Health has been the inauguration of the Central Council for Health Education, founded in 1927, which has had for its aims :— (a) to promote and encourage education and research in the science and art of healthy living and to promote the principles of hygiene and encourage the teaching thereof; (b) to assist and co-ordinate the work of all statutory bodies in carrying out their powers and duties under the Public Health Acts and other statutes relating to the promotion or safeguarding of Public Health or the prevention or cure of disease in so far as such work comprises health education and propaganda. Prominent amongst those who founded the Central Council was Dr. (later Sir Allen) Daley.² The Society has, through its members, given evidence on Public Health matters to many Royal Commissions and Government Committees of Enquiry and it is the normal channel of consultation between the Ministry of Health and Board of Education on the one hand and Medical Officers of Health and other Medical Officers employed in Public Health Departments on the other. As a general practice, the views of the Society are obtained by Government Departments when Regulations and Orders are being drafted which affect the administration of any part of the Public Health Service.

¹ Prominent amongst the negotiators on the B.M.A. side were Dr. G. F. Buchan, the Medical Officer of Health of Willesden, and Dr. Alfred Cox, who occupied the office of Secretary of the Association from 1912 to 1932.

² Daley, Sir W. Allen, M.D., F.R.C.P. (1887–). Educated at the Merchant Taylors' School, Crosby, and the University of Liverpool. Formerly Medical Officer of Health of Bootle, Blackburn and Hull. Appointed Principal Medical Officer of the L.C.C. in 1929, and Medical Officer of Health in 1939.

One important duty which falls to the lot of many senior members of the Public Health Service is the training and examination of the expert lay staff employed by local authorities.

It has already been mentioned (p. 413) that in 1909 the Board of Education issued regulations prescribing the qualifications and the course of training required for health visitors. As a result of this action by the Board, a number of institutions of various kinds, both in London and in the provinces, set up courses of training differing in duration and scope, terminating in the issue of a certificate which was, as a rule, only of limited value. Some attempt was made jointly by the Ministry of Health and Board of Education in 1919 to formulate a standardised course of instruction for health visitors (Health Visitors Training Regulations) and grants were paid to training schools for this purpose.

Up to 1925, however, the system of separate examinations, involving the granting of local certificates, continued. In that year, in order to systematise training and certification, the Ministry appointed the Royal Sanitary Institute as the central examining body. The fact that at long last there was a centrally issued Health Visitors' Certificate was of great advantage to local authorities, as this was a qualification of recognised status vouched for by an experienced examining body. There was still much diversity in the courses of training provided by the various schools as regards duration, the amount of practical work and the number of lectures, and a Joint Consultative Council, convened by the Ministry of Health, has done much since 1930 to bring a measure of uniformity into the syllabuses of instruction. The work of this Council has been carried on since 1945 by the Standing Conference of Representatives of Health Visitor Training Centres which meets periodically at Whitehall.

An equally important part of the educational functions of the staffs of Public Health Departments is the training of those officers, in modern times called sanitary inspectors, who were in the nineteenth century referred to as inspectors of nuisances. It has already been mentioned (p. 233) that the first qualification ever established for lay members of the staffs of Public Health Departments was the Certificate for Inspectors of Nuisances inaugurated by the Sanitary Institute in 1877. The fact that such a qualification was available enabled local authorities, in the course of time, to staff their departments with persons who had had at least a minimum amount of theoretical and practical training. For many years the tendency was to encourage building trades' operatives to become sanitary inspectors, and most of the older inspectors entered the profession through the portals of that industry. During the

'thirties, however, this tendency became progressively less marked, and it is now usual for young men intending to enter this branch of the Public Health Service to commence the course of training without any previous contact with the building trade.

The founding of training schools for these employees of local authorities was the necessary consequence of the establishment of a qualification and, in most of the larger urban areas, centres of this kind, often closely associated with Public Health Departments, were organised during the earlier years of the present century. The Royal Sanitary Institute, as an examining body, gave place to the Royal Sanitary Institute and Sanitary Inspectors Examination Joint Board in 1926.¹

Although the duties of these inspectors are mainly concerned with the environmental defects of the areas in which they work, some part of their time, in towns predominantly industrial, will often be allocated to the sanitary inspection of factories.

As will be understood from what has been said in previous chapters about legislation in regard to factories, the function of regulating the conditions under which so many members of the community work for a specified number of hours each day, has always been regarded in this country as belonging to central and not local government. That this was the proper policy is evident when the need for uniform standards throughout particular industries in regard to such matters as safety regulations is considered. Factory inspectors are therefore civil servants, responsible only to their Central Department and not in any way subject to local pressures. Nevertheless, some part, albeit a very small one, is played by local sanitary inspectors in connection with factories and workshops in their areas.

Under the Factory and Workshop Act, 1901 (amended in respect of laundries by the Factory and Workshop Act, 1907), a District Council was charged with the duty of ensuring that every factory in its area was provided with a means of escape in case of fire. This duty is often discharged by special building inspectors and not by sanitary inspectors. In regard to workshops and workplaces the Act placed upon the local authority, and hence on its sanitary inspectors, the duty of ensuring that the sanitary arrangements of these buildings—cleanliness, airspace, ventilation and drainage—were satisfactory. The provisions of the nuisance sections of the Public Health Act, 1875, were made to apply to workshops and workplaces, with, in addition, supplementary requirements under the Act of 1901.

¹ This is a body incorporated under the Companies' Act. It consists of 30 members, half of whom are appointed by the Ministry of Health.

The Factory and Workshop Act, 1901, with only minor amendment, lasted a long time; and it was not until 1937 that it was superseded by a completely comprehensive Act. Both these Acts, although they differ to a considerable extent in regard to their detailed provisions, have the same structure and deal with the same subjects. Both are concerned with health, safety, and dangerous and unhealthy industries, and each of them has much to say regarding the hours of employment of women, young persons and children just as had its predecessors of the nineteenth century. Hours of labour amongst male operatives are not regulated in these or in any of the Factory Acts, being left to the interplay of competition between the trade unions and the employers. Conditions in factories, as the twentieth century wore on, had improved out of all knowledge as compared with those 50 years previously. The vast number of new factory buildings, housing the light metal trades and industries concerned with synthetic fabrics, were light and airy, with a functional efficiency far surpassing that of the cotton and woollen factories, upon the products of which much of the nineteenth century wealth of this country was founded. Hence the picture presented by a survey of conditions existing in the scores of thousands of factories scattered throughout the length and breadth of the country is a variegated one. From the point of view of health and amenity some of the newer factories are models of their kind. Others, including cotton and woollen mills built last century, are incapable of full adaptation to meet modern requirements. Even in the case of the older factories, however, much thought has been devoted to improvements in sanitation and ventilation, and rest-rooms, canteens and medical arrangements are coming to be regarded as essential.

The Port Health Service : Health of Seamen

Conditions affecting the health of seamen differ widely from those which apply to the factory worker. It has never, therefore, been possible to adapt the provisions of the Factory Acts, or any similar provisions, to that large section of the population which earns its living by going down to the sea in ships. Even during the present century the conditions of life at sea for the ordinary seaman or stoker, especially in small cargo ships, have been highly unsatisfactory. Poor and badly-cooked food, cramped and overcrowded accommodation and long hours of work, were the usual concomitants of the sailor's life in addition to the ordinary hazards of the sea.

Because of the exceptionally dangerous nature of their occupation, exposure to inclement weather, and the poor conditions under

which they so frequently live and work, the death-rate amongst seamen has always been much higher than among the rest of the industrial population. According to Hutt,¹ the death-rate among merchant seamen has been nearly twice that in the community at large. Greenwood Wilson,² as a result of an enquiry in Cardiff in 1936, came to the conclusion that the death-rate from all forms of tuberculosis in seamen domiciled in that port was significantly higher than in other occupational categories, and he attributes this fact to the unfavourable conditions under which they live at sea. Under the Merchant Shipping Act, 1906, the duty of passing the plans for new ships is placed upon the surveyors of the Board of Trade, whose standards are laid down in formal Instructions to Surveyors issued from time to time by the Department. Under the Merchant Shipping Act, 1894, the amount of space to be allocated to each seaman was 72 cubic feet, and this was increased in the Act of 1906, in respect of new construction, to 120 cubic feet. Up to the outbreak of the second World War the standards for crew's spaces adopted by the Board of Trade's surveyors were, in the opinion of the Association of Port Health Authorities, undesirably low. Since the beginning of the century the Association in its official capacity, and at various periods some of its representatives such as Dearden of Manchester, Howard-Jones of Newport, McMaster of Dover and C. F. White of the Port of London, have been urging the Board of Trade to revise their Instructions to Surveyors in order to obtain much-needed improvements in the standards of accommodation for the crews of merchant ships. For many years progress in this direction was slow and, as many Port Medical Officers pointed out, the provision of sleeping and messing accommodation for seamen in the great majority of British merchant ships was noticeably inferior to that contained in ships coming from certain countries abroad.

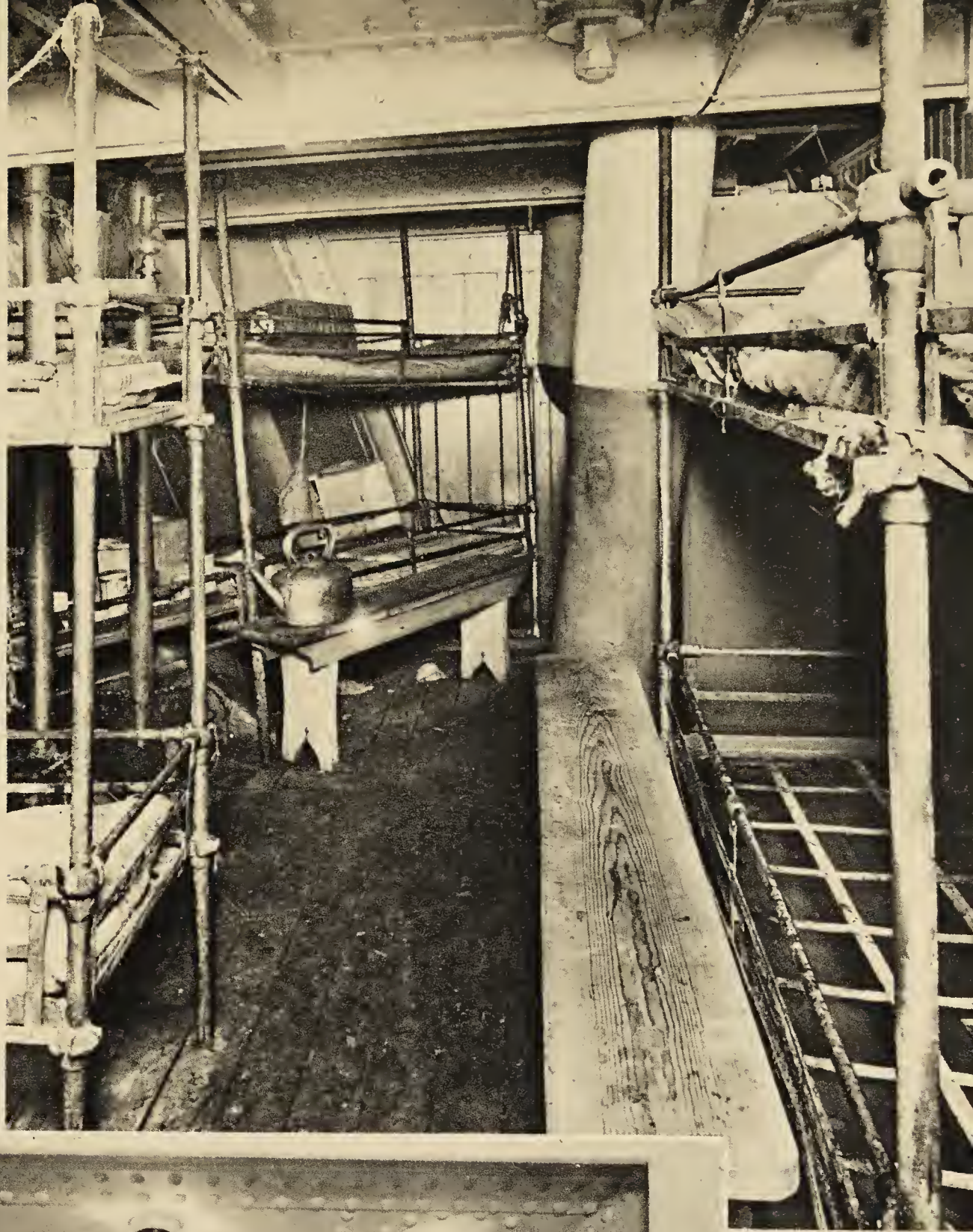
Some improvements of value in crews' accommodation were recommended in 1930 in the Manning Committee's Report to the Shipping Federation, including, after direct discussions with the Board of Trade, the substitution of wooden berths by metal berths, an improvement in W.C. accommodation, and arrangements for the better cleansing of quarters.

That the pressure which had been exerted on the Board of Trade by the Association of Port Health Authorities for so many years to improve crews' quarters, was at long last having some effect was shown in the reports of Port Medical Officers during the period

¹ Hutt, C. W., *International Hygiene*, p. 151.

² Wilson, J. Greenwood, "Slum Clearance at Sea," *Lancet*, Sept. 12th, 1936, p. 645.

CONTRASTS IN CREWS'
ACCOMMODATION IN
CARGO SHIPS OF
TODAY



between 1930 and 1939.¹ Ships constructed at that time were in some cases provided with satisfactory sleeping and messing accommodation for the crews, and there was a decided improvement in the facilities for cooking and for washing clothes, as compared with those in vessels built previously. Progress was, however, unduly slow, and even at the present time (1950) the average standard of accommodation for crews employed in British merchant vessels is below what is necessary for the health of these essential workers.²

Since the passing of the Merchant Shipping Act, 1906, the standard of the diet supplied to seamen has greatly improved. Many owners provide an even more liberal diet than is laid down in the Schedule to the Act. Cooks on vessels of over 1,000 tons (gross) must possess the appropriate Board of Trade certificate, and this ensures a fairly satisfactory standard of competence in those who cook the food on practically all foreign-going ships.

During the period between the two Wars much attention was paid at various international conferences to the welfare of seamen in all its aspects. We can only mention here one or two of the outstanding agreements which were arrived at on this subject. Under an International Agreement signed in Brussels on December 1st, 1924, the contracting parties undertook to establish and maintain in each of their principal ports services for the treatment of venereal diseases in seamen, without distinction of nationality. As an administrative arrangement under the Brussels Agreement each seaman patient is given a medical card which contains particulars of the treatment given at every venereal diseases clinic at which he attends during his voyages.

The question of the general welfare of seamen has been for many years in the hands of the International Labour Office—one of the more enduring of the arrangements set up by the Peace Treaties after the 1914–18 War. As early as 1920 the International Labour Office convened the first of many Seamen's Conferences dealing with every aspect of the welfare of those who earn their living on the sea. This Conference, held at Genoa, passed a series of resolutions dealing with the prevention and treatment of venereal diseases in seamen and the arrangements necessary to safeguard their welfare in port. The definitive Agreement made in Brussels in 1924 implemented the resolutions passed at the Genoa Conference

¹ The name of the Association—previously Association of Port *Sanitary* Authorities—was changed to Association of Port *Health* Authorities in 1937 and, in 1946, to Association of Sea and Air Port Health Authorities of the British Isles.

² Some acceleration of progress in the provision of satisfactory accommodation for seamen in the Mercantile Marine occurred between 1945 and 1950.

on the subject of venereal diseases in seamen. Further consideration of the measures to be adopted for the welfare of seamen in ports was undertaken by the Maritime Conference of the International Labour Office, held at Geneva in May, 1929. For some years after this conference, negotiations went on between the International Labour Office and the governments represented at Geneva, and it was not until 1936 that final recommendations were agreed to at a further conference. At this conference—also held at Geneva—a series of recommendations presented by the I.L.O. were unanimously approved, including the creation of Port Welfare Committees and the provision, in each of the more important ports, of accommodation and means of recreation for seamen.

Before the outbreak of war in 1939 Port Welfare Committees had been established in London, Liverpool, Cardiff and Swansea.

Although the Port Health Service is interested in the physical comfort and welfare of seamen, its primary duty is to prevent, as far as that may be possible, the admission of persons suffering from the more serious of the infectious diseases into this country. In the earlier chapters of this book instances have been given of outbreaks of cholera and smallpox, affecting many thousands of persons and accompanied by a high death-rate, which have been caused by the importation of a few cases of these diseases. Founded in the years following the passing of the Public Health Acts, 1872 and 1875, this Service, strongly supported by the Local Government Board and, after 1919, the Ministry of Health, has become steadily more and more efficient. Today it is able to interpose a strong barrier against the importation of infectious disease from outside, whether by sea or by air.

One of the reasons for the success of this Service is that it has been materially aided by the existence of a number of Sanitary Conventions, all designed for the purpose of obtaining as large a measure as possible of international co-operation in the fight against disease. It is manifestly to the interest of all countries to reduce the amount of serious infectious disease both within and without their own borders. Because of the vast amount of international trade and commerce, involving continuous communications between one country and another, such diseases as plague, yellow fever, cholera and smallpox are of universal sanitary interest wherever they may occur. International Sanitary Conventions, of which there have been many, have therefore usually succeeded in arriving at a general measure of agreement on the subject of epidemic disease and of the co-operative action to be taken from time to time by the various nations to reduce its incidence.

Of the many Sanitary Conventions in which this country has taken part, that signed in Paris on June 21st, 1926, was perhaps the most useful. The International Sanitary Convention of Paris, 1926, consists of 66 articles and contains detailed provisions for the control of outbreaks of plague, cholera, yellow fever, typhus and smallpox. These diseases are often referred to as the "Convention" diseases. Action agreed to be taken by countries ratifying the Paris Convention included the notification of the existence of cases of these diseases within their borders to the *Office International d'Hygiène Publique*, measures to deal with rats and mosquitoes, and measures relating to ships and emigrants.

The scope of the International Sanitary Convention of Paris, 1926, was wider than that of the previous Convention of 1911-12, as the new agreement not only included plague, cholera and yellow fever but, in addition, typhus and smallpox. After ratifying the Convention, the British Government repealed the Cholera, Yellow Fever and Plague Regulations of 1907, the Port Sanitary Authorities (Infectious Diseases) Regulations, 1920, and the Public Health (Deratisation of Ships) Regulations, 1929, and substituted for them the comprehensive Port Sanitary Regulations of 1933.

Some Epidemics Occurring in this Country between 1936 and 1939

In the previous section some information has been given about progress in international co-operation in connection with the transmission of some of the more serious of the communicable diseases from one country to another by sea. It is proposed in the present section to mention some of the indigenous outbreaks which occurred in this country during the years immediately preceding the war. Although modern science and modern sanitation had to a large extent abolished epidemics of the excessively fatal and invasive type which occurred in this country during the whole of the nineteenth century, it had not been very successful in suppressing or reducing the incidence of the commoner diseases such as diphtheria, scarlet fever, and measles, spread mainly by droplet infection. Of these, diphtheria has the greatest fatality-rate and is rightly dreaded by the parents of small children. Diagnosed at once and treated by a sufficient amount of antitoxin, diphtheria takes its place as one of the diseases over which the medical profession has a large measure of control. But antitoxin, efficacious on the first and second days of the disease, is comparatively valueless a few days later. Late diagnosis, from whatever cause, is therefore a tragedy in the case of a child suffering from diphtheria. A large measure of safety against diphtheria can, however, be obtained in

another way—by the method of immunisation. It is a singular reflection upon the commonsense of this country that a method which had already shown such favourable results in the United States and Canada should have been so neglected in England until after the outbreak of war in 1939. Neither the Ministry of Health nor the local authorities are entirely free from blame in this matter. Owing to compulsory vaccination, the people of this country had become disinclined to accept, on behalf of their children, any method of immunisation which involves, as all do, penetration of the skin in some measure, however small.¹ The result of this neglect of immunisation was that, in the years before the war, the incidence of diphtheria was high in many parts of the country.

Measles, a disease of high infectivity, continued without abatement to take its toll of a large proportion of the children living in urban communities, recurring in major epidemics at intervals of about two years. Scarlet fever, from the virulence point of view a shadow of its nineteenth century self, occurred in most towns in small outbreaks, the characteristic rash being the cutaneously visible part of some of the depredations amongst the human species of the haemolytic streptococcus.

These diseases, mainly occurring in children, occasioned no particular alarm amongst the adult population. Infections which had evoked terror and despondency in the community during the nineteenth century ceased to be even a memory in the twentieth. Cholera had vanished from the scene in this country after 1893, never to appear again; smallpox, as seen in the 'twenties and 'thirties, was of so benign a character that the patient seldom found it necessary to consult a doctor (p. 374); while typhoid, that typical disease of an insanitary urban civilization, only reared its head occasionally, to sink back into oblivion without doing any serious harm. As regards typhoid that was the usual picture—a failure of some sanitary precaution, a few cases quickly diagnosed, the early recognition by the Public Health Department of the cause of the outbreak, the rapid removal of the infecting agency, and the prompt termination of what was, almost always, a small epidemic.

On one or two occasions, however, as if to show that the giant was not dead but sleeping, this favourable outcome was not

¹ That this disinclination was not very deep-seated is shown by the success of the immunisation campaign conducted during the war by local authorities, with the very active stimulus and encouragement of the Ministry of Health, and especially that of Sir Wilson Jameson, the Chief Medical Officer, when, in many places, more than 60 per cent. of children under the age of ten were immunised and a great fall in the incidence of diphtheria occurred.

attained. Of all the typhoid outbreaks in this country during the present century, the one which took place at Croydon at the end of October, 1937, was by far the most serious. Up to November 27th of that year the number of cases of typhoid notified each week steadily rose and, after that date, rapidly declined. Altogether in this epidemic there were notified, in Croydon itself and the districts adjoining, 341 cases of typhoid fever, of which 19 were secondary, *i.e.*, infected from patients and not from the original source. Up to November 13th, the investigations of the Medical Officer of Health of Croydon, Dr. O. M. Holden, and a Medical Officer of the Ministry of Health, Dr. E. L. Sturdee, had proved fruitless, although the Addington Well, which supplied water to the affected areas, was regarded with some suspicion. It was not until November 13th, that Dr. Holden and Dr. Sturdee learnt that work had been carried out in the Addington Well during the latter part of September and in October and that in this period water from the well had been pumped to supply without being chlorinated or even filtered. Examination of the men who had worked down the well in September and October disclosed the fact that one of them was a typhoid carrier. At the subsequent Ministry of Health inquiry it was accepted that the presence of this carrier at the appropriate times in relation to the incubation periods of cases was the *causa causans* of this outbreak.

In view of the feeling in the borough occasioned by this outbreak, the Minister of Health, Sir Kingsley Wood, appointed Mr. Harold L. Murphy, K.C., acting with two assessors (Sir Humphrey Rolleston, M.D., F.R.C.P. and Mr. H. J. F. Gourley, M.Inst.C.E.), to hold a public local inquiry. It was ascertained at the inquiry that the men engaged in repairs at the Addington Well were not regular members of the Corporation's staff and they had not been medically examined. Neither the Medical Officer of Health nor the Borough Engineer had been informed that chlorination and filtration of water pumped to supply from this well had ceased. Mr. Murphy's report characterised the work of Dr. Holden, the Medical Officer of Health of Croydon, during this epidemic as being that of a "loyal, able and industrious servant of the Corporation." (For a reference to a previous severe outbreak of typhoid at Croydon, see p. 129).

In the same year an epidemic of paratyphoid B, occurring in Liverpool and district, was found to be transmitted by an article of food—bread—which had not, as far as the author is aware, been incriminated before. The first case in this epidemic was notified on January 14th, 1937, and the final total of primary cases

was 132, of which 107 occurred in Liverpool, 16 in Bootle, seven in the rural areas adjoining the two county boroughs and two in North Wales.¹ After searching inquiry, the origins of this outbreak were traced to a large bakery. Observations made during the night, when baking took place, showed that 20 employees were engaged in handling loaves after they had cooled, or were touching trays, etc., with which the loaves would subsequently be brought into contact. Of these employed, five, when medically examined, revealed the presence of agglutinins which served to indicate either inoculation or an attack of the disease. One of the men, after blood tests, gave indications that he had had an attack of paratyphoid B and it was confirmed, after his admission to hospital, that he was a paratyphoid B carrier. Experiments conducted by the late Professor Hedley D. Wright showed that it was possible to recover *Bact. paratyphosum B* from bread crusts up to a period of 17 days and, if a very large number of organisms were used, recovery was successful on the thirty-third day.²

It is proposed to refer briefly to the milk-borne epidemic of scarlet fever and tonsillitis occurring in Doncaster in 1936, as a preliminary to some account of the history of pasteurisation, which is given in the next section. In an earlier chapter a description was given of an outbreak of scarlet fever conveyed by the same medium, which was, however, infected by organisms obtained from the cow itself (p. 179). In the epidemic about to be discussed the infection was derived from a carrier, and this is the commonest way in which milk is contaminated by streptococcal organisms. It is to be emphasised that the efficient pasteurisation of milk, combined with mechanical bottling and capping, is a complete safeguard against infection by streptococci and other organisms in milk, whatever the method of contamination of this fluid.

The cases of scarlet fever and tonsillitis which began to arise in the Hexthorpe district of Doncaster on December 11th, 1936, originated in a farm situated just outside the county borough boundary. A visit to the farm elicited the fact that one of the milkers was suffering from a sore throat which he had—it was supposed—contracted from one of his children who was suffering from otorrhoea. Action taken by the Public Health Department included the suspension of the milker from duty, the sterilization of milking utensils, and the making of arrangements for the pasteurisation of the milk supply from the farm. It appears that the milker,

¹ Frazer, W. M., Glover, B. T. J., and Glass, V., "Epidemic of Paratyphoid B Fever in Liverpool and District", *British Medical Journal*, August 21st, 1937.

² Annual Report of the Medical Officer of Health, Liverpool, 1937.

having been infected by the child, himself infected the udder of one of the cows, and that the organisms reached the milk in that way.

The infected milk, amounting to 50 gallons a day, was delivered to 380 families in Doncaster. Of the 1,343 persons in these families, 135 (10 per cent.) contracted scarlet fever and 229 (17 per cent.) tonsillitis.¹

Pasteurisation of Milk

The outbreak of milk-borne scarlet fever mentioned in the previous section, and others described in earlier parts of the book, would have been prevented if pasteurisation had been undertaken before the supply was released for consumption by the public. This method, accompanied by mechanical bottling, is equally effective against infection derived from the cow, the milker or from polluted water used to cleanse the utensils. At every stage in the process of conveying milk from the cow to the consumer there is the possibility of infection, and the only certain safeguard is efficient pasteurisation and the mechanical filling of the milk into sterilised bottles supplied with proper caps. Milk, a highly valuable food for children and young people, is, unfortunately, easily contaminated, and in its raw state it is regarded by practically all who have had Public Health experience as potentially dangerous.

The process of the preservation of food by means of heat treatment has had a long history. It is generally agreed that the credit for proving the value of heat treatment in connection with food belongs to Lazzaro Spallanzani who demonstrated his methods in 1768. But others were also interested in the subject about this time, notably the Swedish chemist Carl Wilhelm Scheele and Nicholas Appert.²

The main progress in this subject was made by Pasteur, whose extensive researches between 1857 and 1862 demonstrated the bacterial cause of the souring of milk and pointed to a method of reducing the multiplication of organisms by heating and thus postponing souring. In spite of this knowledge, the production of a commercial pasteuriser was long delayed. Ashborn of Hildesheim finally constructed the first commercial apparatus of this kind in 1880. It is to be understood that the primary object of those who experimented with the first primitive pasteurising plants was to prevent, or postpone, the souring of milk; but, towards the end of the century, the attention of bacteriologists and others interested in Public Health was drawn to the advantages of pasteurisation from the point of view of the destruction of disease-producing

¹ Annual Report of the Medical Officer of Health, Doncaster, 1936, p. 90.

² To Nicholas Appert we owe the invention of canning of foodstuffs.

organisms. It was soon discovered that the destruction of pathogenic bacteria in milk depended upon the two factors of time and temperature. The "flash" or short-time method was then in use, but Monrad of Copenhagen in 1895 demonstrated some of the advantages of a method of pasteurisation which increased the time of exposure to heat and lowered the temperature. Dr. Charles E. North in New York introduced in 1907 the first successful low-temperature pasteurising plant and this led to a rapid increase in the use of heat-treatment for milk in the United States.

During the years which followed, the movement for the heat treatment of milk spread from the United States to this country, but the main reason for the processing of milk by the larger distributors was to enhance its keeping qualities. Milk-borne outbreaks of infectious disease and, above all, the continued prevalence of bovine tuberculosis, lent emphasis to the need for pasteurisation in the interests of Public Health. That the incidence of tuberculosis of bovine origin was still high in this country even as late as 1932 was shown as a result of an investigation by a special committee of the People's League of Health. The report of the committee of investigation published in that year disclosed the fact that at least 40 per cent. of all dairy cows in this country were suffering from some tuberculous infection, and that, of these, 0.2 per cent. had tuberculosis of the udder and were therefore secreting tuberculous milk from time to time. Repeated examinations of raw milk had revealed the presence of live tubercle bacilli in from 2 to 13 per cent. of all samples. Milk from a considerable number of cows, collected into containers by large firms, would almost certainly be infected with tuberculosis and would therefore be dangerous unless pasteurised.

The heat treatment of milk sold in large quantities in the great cities served both the interests of Public Health and of commerce. Many of the larger firms, supplying milk to thousands of families each day, realised at an early date that it was their duty to be interested in the processing of this important article of food as much from the Public Health as from the commercial point of view. Official recognition in this country of the need for pasteurisation of milk was long delayed, and it was not until 1922 that the Ministry of Health issued the first Milk (Special Designations) Order, to be replaced as a result of experience by a further Order in the following year. The two special grades of milk referred to in the Order, and which require mention here, were tuberculin-tested and pasteurised. A tuberculin-tested milk is obtained from special herds of cows subject to a stringent test in order to weed out any that may be

infected; a pasteurised milk is one retained at a temperature of between 145° and 150°F. for at least 30 minutes, and then cooled immediately to a temperature of not more than 55°F.¹ Both tuberculin-tested milk and pasteurised milk are regarded as "safe" milks as far as tuberculosis is concerned, the former because it is obtained from cows which have been shown to be free from that disease, the latter since heat-treatment, as laid down in the Order, kills any pathogenic organisms which may be present, including tubercle bacilli. The overwhelming advantage of pasteurisation if it is conducted efficiently, and the milk is bottled mechanically with due precautions, is that the process makes the product safe from all kinds of infection, whereas tuberculin-tested milk may be safe only as regards tuberculosis.

Under the Milk (Special Designations) Order, 1923, a number of tuberculin-tested herds were formed; but the procedure is difficult and expensive and only a small proportion of the milk sold has come from cows tested in this way. Pasteurisation, on the other hand, has become increasingly popular in all the larger urban areas, both as a preventive of souring and as a safeguard of the health of the public. Much of the milk sold in this country is not, however, produced under the precautions laid down in Special Designations Orders. Precautions in regard to cleanliness have been enforced by local sanitary authorities under the various Milk and Dairies Orders from 1885 to 1926.² These Orders contained provisions in regard to the inspection of cattle, the protection of milk against infection and contamination, and the cleanliness of milk churns and other receptacles, etc. While the effect of these provisions has been beneficial in raising the standard of cleanliness in milk production, Milk and Dairies Orders have had little influence upon the safety of milk from infection by pathogenic organisms derived from the cow itself or from milkers or contaminated utensils. A "safe" milk can only be ensured by pasteurisation or, to a lesser extent, by the tuberculin-testing of cows.

The Milk (Special Designations) Order, 1936, constituted an improvement on previous requirements because it laid more emphasis on pasteurisation, including in the list of designated milks a pasteurised tuberculin-tested grade. This milk, of a high standard of cleanliness, produced from tuberculin-tested herds with the additional safeguard of pasteurisation, is the finest type of milk

¹ By an Order issued in 1941, pasteurisation might be effected by raising the temperature of the milk to 162° F. for a period of fifteen seconds.

² The Order of 1885, the first of an extensive series of Dairies, Cowsheds and Milkshops Orders, was made by the Privy Council under the Contagious Diseases (Animals) Act, 1878.

obtainable in this country. There is, however, very little tuberculin-tested milk, pasteurised or otherwise, available for sale and the majority of consumers have to be satisfied with accredited milk which is clean but not safe, pasteurised milk of the ordinary kind which is safe, but is sometimes produced from consignments of rather unsatisfactory milks, and undesignated milk which is not free from the risk of infection by pathogenic organisms and is oftentimes far from clean.

Medical Policies

The transfer of the Guardians' hospitals to the county councils and county boroughs on April 1st, 1930, was an event of first-class importance in the history of the medical services of this country because it led to an improvement in the staffing and equipment of the hospitals themselves, and to the linking together of preventive and curative medicine under one type of administration. A closer association between hospitals on the one hand and Maternity and Child Welfare, the School Medical Service and such special services as Venereal Diseases and Tuberculosis on the other, the whole being administered under the Medical Officers of Health of counties and county boroughs, enabled higher standards of efficiency to be attained than ever before in the history of Public Health in this country.

Nevertheless, the feeling began to gain ground in those circles interested in the medical and social services that all was not completely satisfactory with the organisation of the nation's provision for the treatment of the sick. Hospitals were still divided into those administered by local authorities and those controlled by voluntary bodies. The two groups of voluntary and local authority hospitals pursued, on the whole, dissimilar policies, and, except perhaps in some of the University cities, there was comparatively little co-operation between them. While the National Health Insurance system had been found, as a result of long experience, to be a great improvement on the domiciliary medical services supplied by the clubs and friendly societies prior to 1912, there were nevertheless serious deficiencies in the scope and extent of the treatment facilities provided under the statutory schemes. The State, which provided domiciliary medical service for the 20,000,000 persons who were contributors under the National Health Insurance Acts, neglected entirely the dependents of insured persons, and left the important question of hospital treatment of cases of serious illness to local arrangements. Local arrangements in the urban areas consisted mainly of hospital contributory schemes,

which in many cases embraced practically the whole of the working-class members of the population. Hospital contributory schemes were primarily intended to use the facilities of the voluntary hospitals, but as time went on the resources of the local authorities' hospitals were included in the services provided for contributors. In those areas where contributory schemes had been efficiently administered they undoubtedly constituted an adequate substitute for the absence of a State hospital service, but in many parts of the country, especially in rural districts, this provision was not available.

The defects in the provision of medical services during the period between the two World Wars were the subject of comment in a number of official and unofficial reports. Consultative Medical Councils, the Royal Commission on National Health Insurance, the Departmental Committee on Scottish Health Services, the Voluntary Hospital Commission and the British Medical Association all called attention, from their various standpoints, to the deficiencies in the National Medical Services, and made recommendations, in accordance with their differing policies, for the improvement of the provision for dealing with the health of the people. From the unofficial standpoint, a body called Political and Economic Planning (PEP), which has no particular medical affiliations, issued in December, 1937, a comprehensive survey of the British Health Services and made detailed recommendations for their future development. The scope of this report is so vast and it covers so many fields that it is impossible to summarise it in a few paragraphs. On the hospitals side PEP condemns the complete separation of the voluntary and municipal systems and seems to favour some method of regionalisation, while recognising the difficulties of devising any practicable scheme to this end. The report does, however, give a due measure of appreciation to the success of contributory schemes, and considers whether the extension of such schemes might not be sufficient for the purpose of financing a satisfactory system of voluntary hospitals. It emphasises, however, the necessity of defining clearly the ends which any new organisation should seek to attain. "The nation needs sickness services, but a nation which regards them as a substitute for health services of the type described . . . is going to find the confusion expensive in money and in suffering."¹ The PEP report, like many others, is in favour of extending the scope of a national health service to other classes besides the present contributors, including their dependents, but it is doubtful whether a mere extension of the Insurance Scheme would suffice for the health needs of the

¹ *The British Health Services*, p. 395.

population. The framers of the report feel that any new service should be comprehensive, and refer to the need for "a completely planned health service combining a general practitioner and a nursing service, the specialist and the hospital services."¹

The chief value of this noteworthy report is in its survey and discussion of the British Health Services; the importance of the British Medical Association's memorandum lies in the carefully considered scheme which it recommends. In 1929 the B.M.A.'s first proposals dealing with the establishment of a General Medical Service were published, and during the period between that date and 1938 the recommendations of this influential body, containing in its ranks the great majority of the medical practitioners in this country, were the subject of much careful examination. This prolonged discussion of the original proposals led to amendments and additions in the revised edition of the Association's Memorandum, issued in 1938.

Unlike the PEP report, the B.M.A.'s memorandum spends little time in surveying the field of the medical services of the country as its framers felt, no doubt, that the subject had been sufficiently discussed in other quarters, and that what was urgently needed was a series of definitive proposals which might form the basis of administrative action. The scheme is founded upon four basic requirements which are elevated, in the memorandum, to the status of principles. These are as follows :—

- (a) That the system of medical service should be directed to the achievement of positive health and the prevention of disease no less than to the relief of sickness.
- (b) That there should be provided for every individual the services of a general practitioner or a family doctor of his own choice.
- (c) That consultants and specialists, laboratory services, and all necessary auxiliary services, together with institutional provision when required, shall be available for the individual patient, normally through the agency of the family doctor.
- (d) That the several parts of the complete medical service should be closely co-ordinated and developed by the application of a planned national health policy.²

It is clear from the above statement of the principles upon which the B.M.A.'s proposals were based that the pivot of the scheme

¹ *The British Health Services*, p. 222.

² British Medical Association's *General Medical Service for the Nation*, 1938, p. 8.

was to be the general practitioner, who was to be the family doctor advising generally on matters relating to health, and taking into account domestic circumstances and environment in order to discover as early as possible when departures from the normal had occurred.¹ The administrative arrangement suggested by the Association was the extension of the National Health Insurance System to cover dependants and to include some other categories within the £250 income limit. In association with the general practitioner arrangements under the extended National Health Insurance Acts there were to be available the services of consultants and specialists and some ancillary provision of pharmacists, nurses, masseuses, etc., who would work under the supervision of the family doctor. As far as hospital facilities were concerned, the Association's proposals, contained in the memorandum on Hospital Policy approved in principle by the Representative Meeting in 1939, envisaged the grouping of voluntary hospitals under regions, and the development of the idea of a "central" hospital in each area assisted by other hospitals of lesser status, such as district and cottage hospitals, which would normally be staffed by general practitioners. It was not, however, recommended in the main proposals that either hospital or maternity provision should form an integral part of the insurance system, but that they should be supported separately, largely by an extension of contributory and provident schemes.

This rather strange omission, in what purported to be proposals for a general medical service, of specific arrangements on an insurance basis for the hospital treatment of patients, followed the opinions expressed by the Royal Commission on National Health Insurance, 1926, and by the Departmental Committee on Scottish Health Services, 1936. These two bodies had come to the conclusion, on the basis of the conditions then prevailing, that the inclusion of hospital provision in an insurance service was not practicable, partly owing to the insufficiency of hospital beds but largely because of the existence of the two separate hospital systems.

Before any decision had been arrived at nationally on these important matters, the second World War had commenced, and further consideration of them had to be postponed until a more favourable season. It will be realised, however, that the problem of welding into one national health service all the heterogeneous elements which had been brought into being as a result of the social legislation of nearly a century, was a most formidable one. Few of the authors of the official and unofficial reports which had been

¹ *General Medical Service for the Nation*, 1938, p. 11.

published on the subject of the nation's health services had visualised any precise administrative framework into which their proposals could be conveniently fitted. Statements of principles and policies there were in plenty; but nobody appeared to know how to put together all the pieces of the jig-saw puzzle which constituted the British Health Services.¹

¹ The solution was given in the National Health Service Act, 1946.

EPILOGUE

A COMPREHENSIVE HEALTH AND SOCIAL SECURITY SERVICE

With the outbreak of the second World War in September, 1939, we come to the end of this account of the rise and development of the English Public Health Service. Although the story of the Public Health Service has been the predominant theme in the book, sufficient has been said, it is hoped, about other factors influencing the health of the people to make it clear that there is no one royal road to communal health and physical fitness. No organisation controlled by the State can do more than exert a favourable influence upon a subject so personal and so intimate as the health of the individual. The main influence will continue to be exerted by the individual himself through the habits and customs of his daily life, affected as they are by his intelligence, education and environment. The State has, however, its important part to play. It can provide a favourable environment both in the home and in the factory; it is able, within limits dictated by economic and political circumstances, to influence for the better the standard of living of the worker; and it is within its competence to secure for him in old age or sickness the means whereby he can continue to live a satisfactory life.

It is necessary to emphasise the fact that these desirable provisions which influence so much the health of the worker, can only be made by a highly-organised State which has at its command very great resources, and which possesses competent central and local government machinery adapted for this purpose. In few countries, during the course of history, have these conditions been fulfilled; and it is only in the United Kingdom, in some of the Scandinavian countries and, to a lesser extent, in Germany before 1914, that the Public Health and Social Services have reached a high standard of usefulness to their communities.

In this country an enlightened population has demanded an increasing provision of these services during the past 100 years and has, more and more, shown its willingness to pay for them. As education and enlightenment spread so the Public Health and Social Services were extended. There were few set-backs. One of the most interesting and suggestive features in the history of the United Kingdom since the middle of the nineteenth century has been the inexorable progress of social reform. In the steady

continuity of its social progress this country has been unique amongst the nations of the world. It recognised long ago that Public Health is purchaseable. "Public expenditure on national health is like expenditure on a life-boat or a fire-engine; even more, it is like a long-term investment. It yields its interest with absolute certainty, a thousand-fold, but only in the course of years and sometimes in the course of generations. It is money hidden in maternity, in good schools, in pure food, in clean streets, in sanitary houses, in an abundant water supply, in dispensaries, hospitals and sanatoria, and in the vast network of a sanitary and protective cordon in every village and city of the land. Its efforts are unappreciated until they are withdrawn. *Yet without this investment the nation is bankrupt.*"¹

Nevertheless this progress has not been achieved without a struggle, and this book contains the names of many persons—Hampdens of the nineteenth century—who sacrificed much of their money, their peace and their leisure in the fight to secure a further measure of social justice for the vast working populations of the industrial towns. The first of these—Chadwick—was himself defeated, but the cause for which he fought was triumphant in his lifetime. Simon, a greater tactician than Chadwick, enjoyed a long official life during which he was able to establish the principles of the central administration of the Public Health Service; but he, too, was defeated in the end. Shaftesbury, whose high position in the social hierarchy of this country made him almost independent of the mischances of politics, was able to continue his efforts in the cause of the oppressed up to the end of his most honourable and distinguished life. Josephine Butler and James Stansfeld, with the vast host of their supporters, succeeded after years of effort in obtaining the repeal of the Contagious Diseases Acts, and thus gained a victory for humanitarianism, but not, in any particular sense, for Public Health.

Every advance in sanitation or in Public Health has been due to the efforts of one, or a few, far-seeing persons who possessed sufficient vision to perceive in what direction the next step should be taken. Thus we find the association of Robert Philip with Tuberculosis, Champneys with the struggle for the passing of the first Midwives Act, Janet Campbell, McCleary and Moore with the early days of Child Welfare, Eichholz, Crowley and Kerr with the rise of the School Medical Service, Morant with the inception of National Health Insurance, and Newsholme and Newman with all the

¹ Sir George Newman. Annual Report of the Chief Medical Officer of the Ministry of Health, 1921, p. 9.

activities which resulted in the organisation throughout the country of the modern Personal Health Service. Newman, whose death after a long illness took place in May, 1948, was in many ways the most remarkable of all the distinguished men who, since the time of Simon, have held the office of chief medical adviser to the Government. He was fortunate in the rich opportunities for service which fell to him during his career and in the length of time during which he was able to hold office. As Chief Medical Officer of the Board of Education, he wisely guided the rise and development of the School Medical Service until his retirement in 1935. His great opportunity came in 1919 when he was given the appointment of Chief Medical Officer to the newly-created Ministry of Health, continuing in his office at the Board of Education. Holding the joint appointment, Sir George Newman was able to survey the whole field of this country's public medical services, and to guide the development of the Child Welfare Service in line with that of the Medical Service associated with the educational system. Further opportunities for the co-ordination of the medical services came to him with the passing of the Local Government Act, 1929, and the consequential transfer of the Guardians' hospitals and institutions to the councils of counties and county boroughs. He realised the importance of integrating the transferred services with the Public Health Services, and his memoranda on these subjects issued in 1929 and 1930 were founded on sound principles and full of the wisdom acquired in the course of a lifetime spent in the public service.

The greatest handicap of the growing Public Health Service, up to the end of the nineteenth century, was the lack of precise scientific knowledge. Simon and his successors felt this need acutely, realising to the full that they were basing their administrative arrangements on the shifting sands of a sadly imperfect knowledge of the ætiology of disease. It is not surprising, therefore, that Simon, early in his career, attempted to stimulate medical research by every means in his power. Much of this research was conducted by the method of local investigation into the origins of outbreaks of infectious disease, and Greenhow, Burdon Sanderson, Seaton, Whitley, Bristowe and Holmes were some of those who assisted him in this way. But Simon, Buchanan, Thorne Thorne and the other Medical Officers of the Local Government Board fully understood that fundamental medical research must be initiated in the laboratory and not in the field; and, *pari passu* with the development of the sanitary services, they encouraged with advice and financial help those investigators who were working in private laboratories or in hospitals. Burdon Sanderson, Thudichum, Klein

and Houston were amongst those who were assisted by the Central Department in this manner and some account of their work is given in various chapters in this book. Of these investigators, Houston was the most successful in actual results largely because, coming late on the scene, he had at his disposal bacteriological techniques which were not available to his predecessors.

Throughout the history of Public Health we see gradual progress on all fronts. A rapidly increasing population, largely subsisting on imported food, found itself towards the end of the nineteenth century in receipt of a slowly rising level of real wages. This rise in the standard of living continued into the twentieth century and was only interrupted by the first World War, with its aftermath of trade depression and unemployment. Fortunately, by that time, the newer social services such as National Health Insurance and Unemployment Benefit had been developed sufficiently far to act as shock-absorbers to the badly-stressed social organism, and the country survived the years of depression without any signs of revolutionary trends and without a serious declension in the standard of health of the community. The value to Public Health of the social services, both in times of national prosperity and depression, cannot be over-emphasised and it is because of their influence on health that some account of their rise and development has been included in these pages. Their great weaknesses—that they were not sufficiently developed and were not comprehensive—have been removed by legislation passed since the end of the late war. Another disadvantage of the organisation of the social services has been that they were not sufficiently integrated with the Public Health and Hospitals system. This disadvantage has also been removed by post-war legislation.¹

Legislation passed since the war, with the object of unifying the social services, had its source and origin in the Beveridge Report of 1942—a State document of the utmost importance.² Never before in the social history of this country has a single report—even of a Royal Commission—led to such outstanding consequences. Following it, in the period 1944 to 1948, there came into operation six

¹ The legislation referred to, which had the agreement in principle of both major parties, consisted of the Ministry of National Insurance Act, 1944, the Family Allowances Act, 1945, the National Insurance (Industrial Injuries) Act, 1946, the National Health Service Act, 1946, the National Insurance Act, 1946, and the National Assistance Act, 1948. The last-named Act abolished the Poor Law (sec. 1), substituting for it the organisation under the National Assistance Board.

² Report of the Inter-departmental Committee on Social Insurance and Allied Services, 1942.

major Acts of Parliament which have revolutionised the treatment of the poor, the unemployed, the sick and the aged in this country. A list of these Acts is given in the footnote to page 474. Not only did the legislation arising out of the Beveridge Report transform the social services of this country, but the Report led also to the passing of the National Health Service Act which has had the effect of unifying, under the Ministry of Health, the Public Health, Hospital and Medical Services.

To give a description of the unified services dealing with National Insurance, National Assistance and National Health would be going beyond the limits assigned to this book. They are mentioned as the end results of the gradual development of public services which had their inception in events happening more than a hundred years ago.

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